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Cover Photo, Photo Researchers, Inc.

## Get It Straight

No one likes wearing braces. That's why lots of kids will welcome a new invention that promises to get the metal out of their mouths faster—with electricity.

Braces wearers will slip the new gadget into their mouths at bedtime. All night long, a painless low-level electric current will run across the gums. The electricity won't actually straighten teeth. It will help weaken the boundaries between them so it's easier for the wires and springs of the braces to pull teeth into place.

Penn-Med Technology, the Pennsylvania company that's

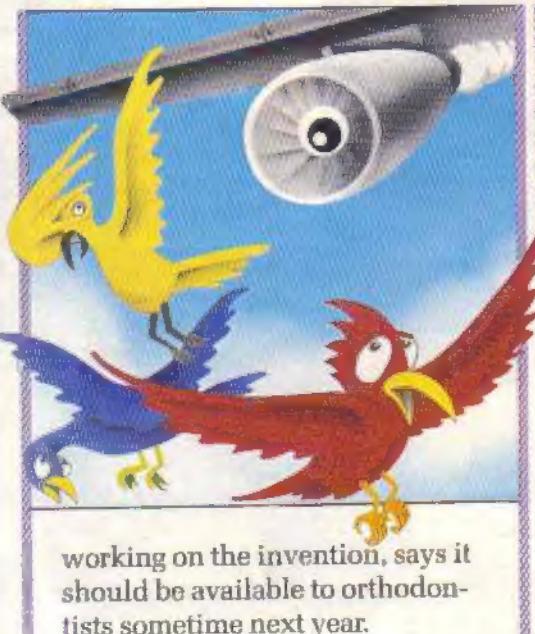
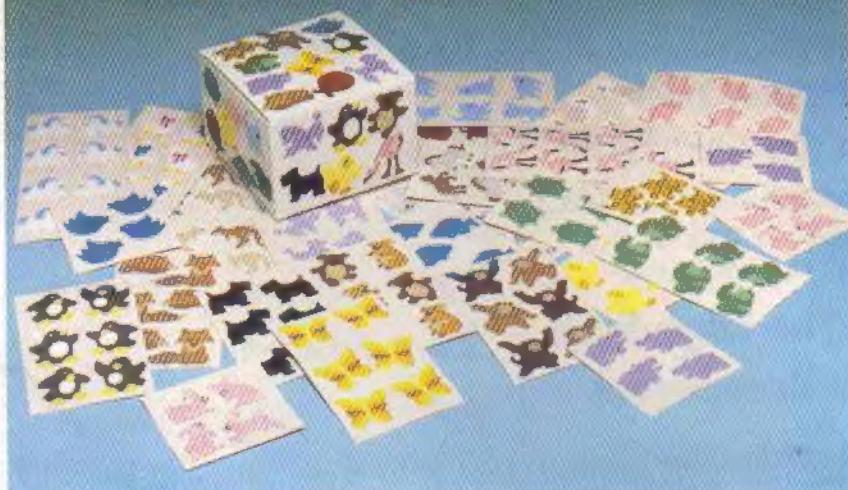


ILLUSTRATION BY NEIL SAWYER

working on the invention, says it should be available to orthodontists sometime next year.

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Satisfaction Guaranteed or return unused within 30 days for a refund.

## Birds' Eye View

As jet planes roar down airport runways, fans inside their engines whirl around at high speeds. When nearby birds get nosy, they can be sucked right in. That's bad—for the birds and the planes.

Different airlines have different ways of fighting the problem. But All-Nippon Airways, a Japanese company, has the neatest notion. They've painted big eyes on the fans. The spinners spin, the eyes swirl, and birds stay safely away from the scary eyes of the sky.

## Easy Riding

For years, drivers have taken care of cars. Now cars can take care of drivers, thanks to new gadgets that make driving safer:

- One auto company is working on windshield wipers that sense when it's raining. They start wiping all by themselves.

- Another invention flashes long-distance drivers a signal, when it's time to take a rest—every two hours on clear days, more often in the rain or at night. (If the car's headlights are on, the gadget knows it's nighttime. If the windshield wipers are on, the gadget knows it's raining.)

- Miniature sonar signalers built into bumpers will warn when a car is going to back into something—like a tree, a bicycle or another car.

- Parking will be easier, too, with new steering systems that turn all four wheels at once. They'll make it a snap to slip sideways into tight spots.

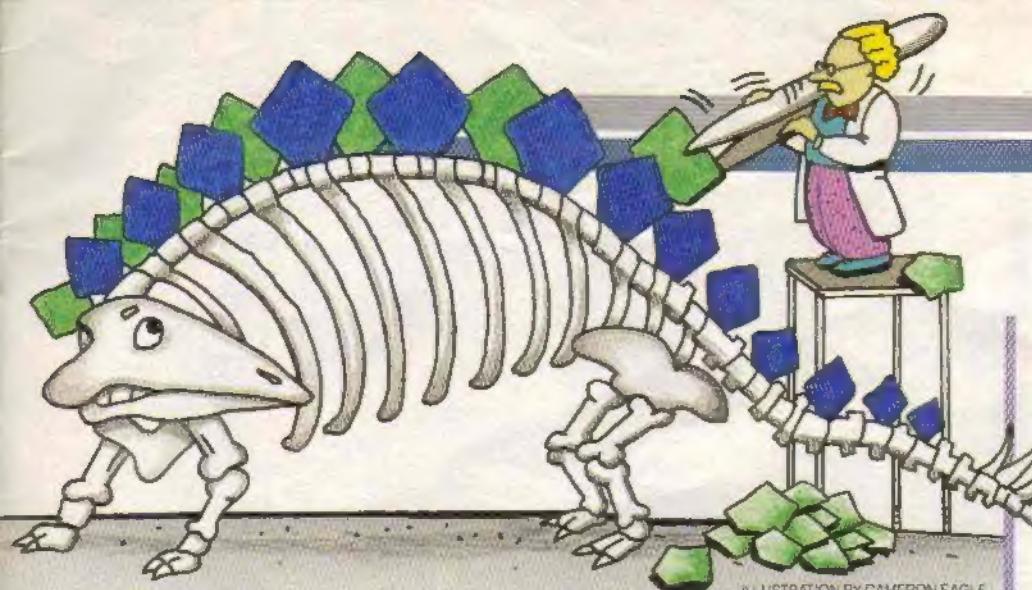


ILLUSTRATION BY CAMERON EAGLE

## Less Armor

You've probably seen pictures of Stegosaurus, the famous armored dinosaur. They probably showed old Stego with two rows of armor plates stretching from his head to the tip of his tail.

Those pictures are wrong. That's the word from scientists taking a new look at Stegosaurus fossils. Stego, they say, had only one line of armor.

What was it for? No one can say for certain, but two ideas sound likely. One seems obvious: Stegosaurus defended himself with his armor. Some scientists even believe the dinosaur could use muscles in his back to point the plates up or down.

The plates may have had another purpose. They may have been portable solar heaters, soaking up sunlight to keep Stegosaurus warm on cold prehistoric days.

## The Big Picture

What in the world is going on on Planet Earth? People are turning forests into farms. Farmlands are turning to desert. The air's a teeny bit warmer all over the planet, all year long. And everything that changes, changes something else—but how? The world's scientists have decided to put their heads together and figure

out the big picture. They want to know how small changes in nature and in the way we live add up to big changes for the Earth.

In 1992, scientists from all over Earth will start collecting facts about the planet's environment from labs on land, under the sea and even up in space. They'll put the facts into computers and try to figure out how modern life is changing the Earth.

It may take 20 years to gather all the facts and put them together. Dr. John Eddy, a leader of the project, told CONTACT it's worth the wait: "We want to know how the Earth works!"

## Bats? Drove!

They fly at night, swooping from attics and deep, dark caves—creatures of myth and mystery. But bats aren't bad guys. In fact, scientists say, if your backyard is buggy, a bat-house might be your best bet.

A bat-house is just like a bird house—for bats. It invites the little creatures to hang out in your backyard.

Bat Conservation International, a Texas-based group that sells bat-houses, says Little Brown Bats can eat more than 600 mosquitoes an hour. That makes them a boon if your backyard's bugged. And despite what most folks think,

bats are clean and friendly and hardly ever bite.

The danger of catching a disease from a bat is smaller than the bats' danger of dying from bee stings. Built-in radar makes sure they won't get tangled up in your hair either. And they're not "blind as a bat." Their eyes see just fine!

To find out more about these batty buddies, write to:

**Bat Conservation International**  
P.O. Box 162603  
Austin, Texas 78716-2603



## So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science stories from the news that have to do with the future. (Be sure to tell us where you heard the story.)

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# **Right Before Your Eyes**

## **SEEING YOUR WORLD A WHOLE NEW WAY**



by Russell Miller

It's the middle of the day. You're in school. Mom and Dad are at work. All's quiet in your house, right?

Not a chance. You can't see it and you can't hear it, but your house—and your school and the shopping mall and everywhere else—is packed with action 24 hours a day. A new book called *The Secret House* by David Bodanis (published by Simon and Schuster) lets you in on all the goings-on you'd see if you were super-small or had super-sensitive senses.

For instance, all day long, the hangers in your closet are groaning under the weight of your blue jeans—a deep, deep low-frequency moan. The noise bounces back and forth off your bedroom walls—but you'll never hear it.

Did you forget to turn off the fluorescent lamp on your desk? Don't look now, but it's flashing 120 times a second, on and off, on and off. That's because the flow of electricity through the wires in your house keeps stopping to switch directions. (Most electricity in the U.S. does

**Above:** Who would think a single drop of water could make such a big splash? This high-speed photograph shows how a glass of water jumps when one drop plops.

that.) The lamp's never off for more than a twentieth of a second, though. That's why you never noticed.

Beneath that flashing light, millions of microscopic creatures called mites are chewing on dust particles in the carpet on your floor. Tiny specks of wood, glue and ink are falling from the morning paper onto the kitchen table. The sunlight pouring through the window is heating your walls and stretching them. (Just a little, though. They'll shrink again in the cool of the night.)

One look at these photos and you'll see what an amazing place the everyday world really is. The world of *The Secret House* is the one you see every single day—but we'll bet you've never seen it quite this way. ➤

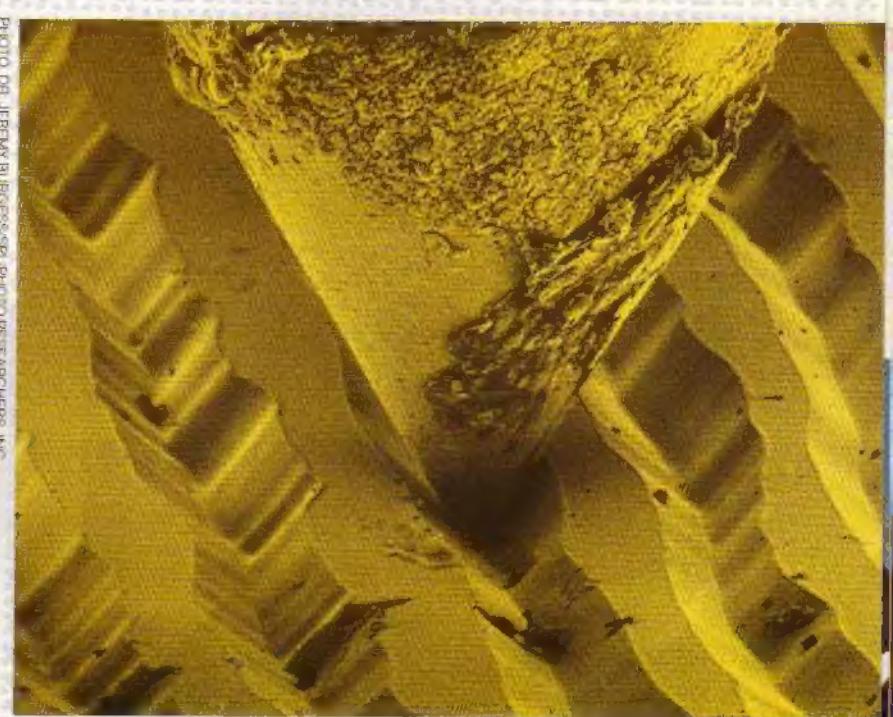


PHOTO DR. LLOYD M. SEIDEN/PHOTO RESEARCHERS, INC.

**Left:** Here's what turns a potato from tough to tender. As it cooks, cells inside the potato pop open, freeing little balls of starch. If the cells stayed shut, you couldn't digest the tater. This picture is a "scanning electron micrograph." It's taken by a device that uses electrons—particles smaller than an atom—to make three-dimensional images of tiny objects.



PHOTO DR. JEREMY BURGESS/PHOTO RESEARCHERS, INC.  
PHOTO © BILLY PHOTO ASSOCIATES/SCIENCE SOURCE/PHOTO RESEARCHERS, INC.



**Left:** Take a closer look at your peanut butter sandwich and this is what you might see—the craters and caverns in a slice of white bread.  
**Above:** Maybe it's Beethoven, maybe Bon Jovi. This scanning electron micrograph zooms in on a record player's needle as it navigates the grooves of a stereo LP. Straighter grooves make softer sounds.

**Right:** If you've ever wondered why it's good to cover your nose when you sneeze, this photo provides a clue.

Ah-choo!

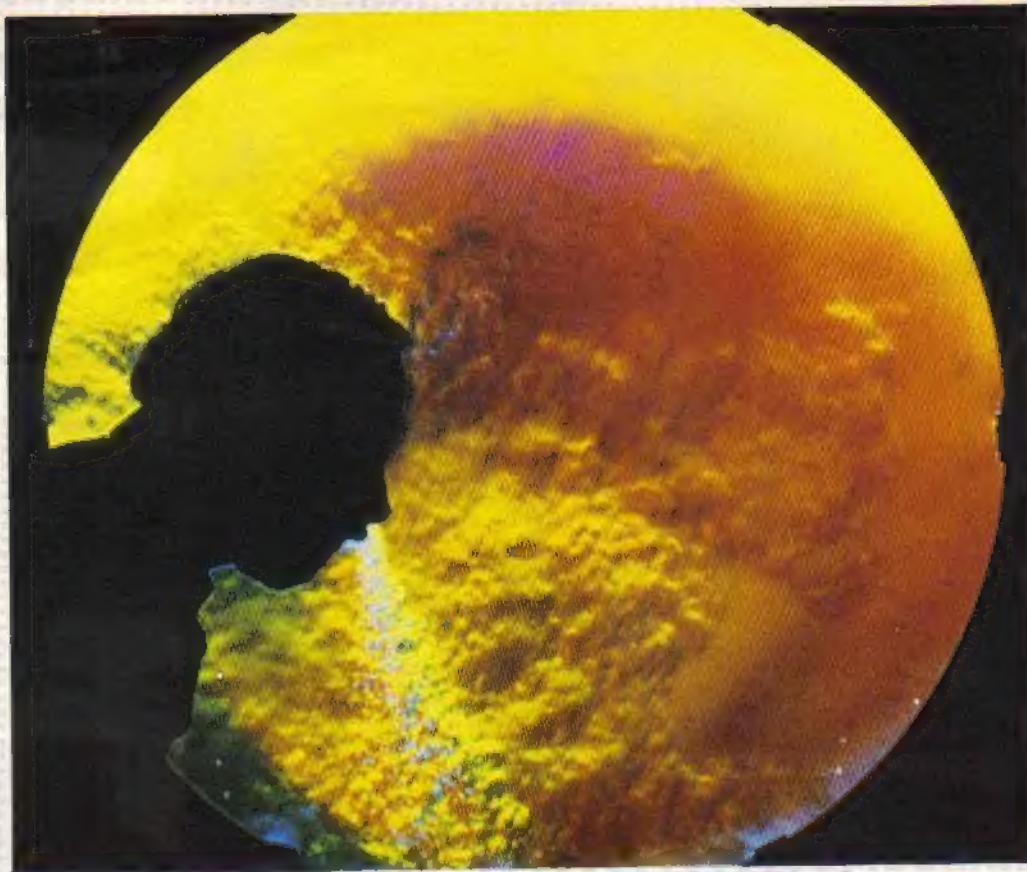


PHOTO BY GARY STITTLE/PHOTO RESEARCHERS, INC.

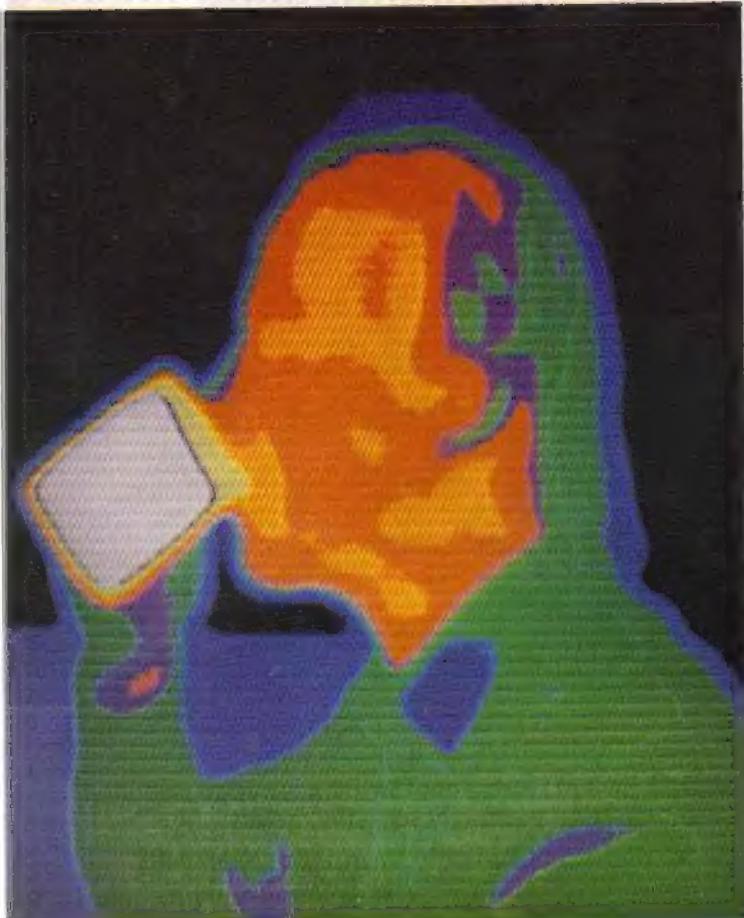


PHOTO: GLEN WILLIAMS & HOWARD METCALF/SPL/PHOTO RESEARCHERS, INC.

Thermograms are pretty cool—and pretty hot. They're images that show temperature. White is hottest (above 102°F), then come yellow, orange, red, green and blue (below 74°F). **Left:** A man sips a hot mug of coffee. **Below:** An electronic kettle starts to heat up.





PHOTO BY TONY BRAIN & DAVID MCKEE/PHOTO RESEARCHERS, INC.

## The "What Is It?" Contest

Can you pinpoint exactly what this close-up photo shows? (Chances are you've got these items—on a much smaller scale—somewhere in your home.)

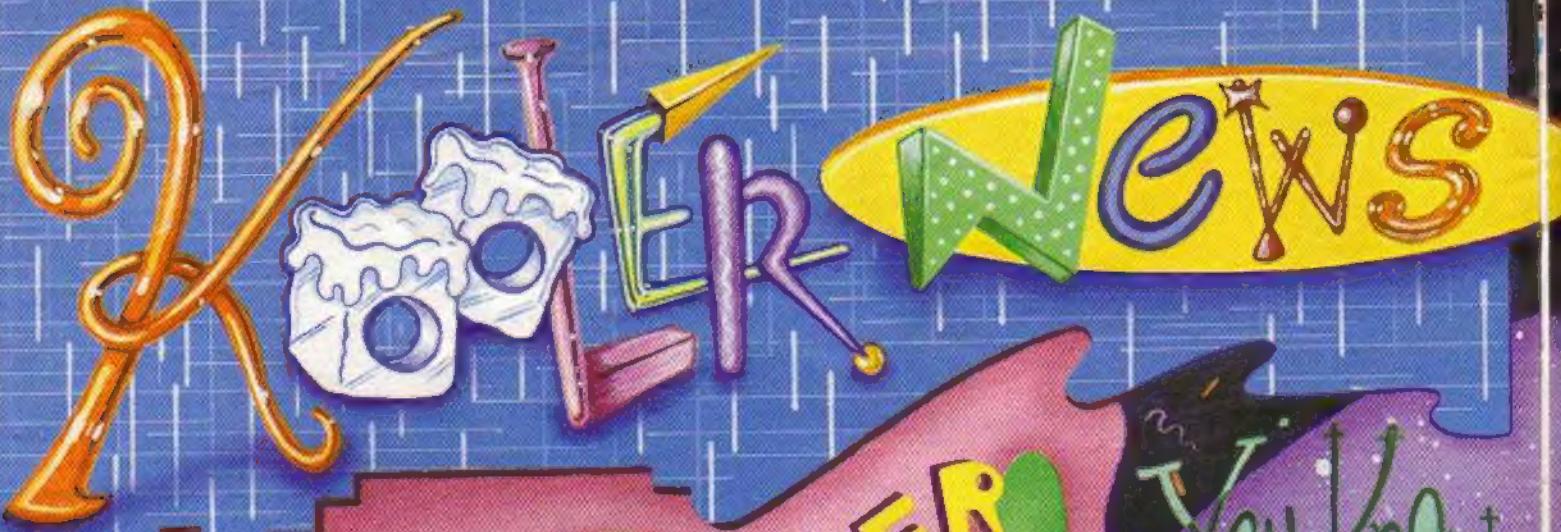
Once you think you've got the

answer all sewn up, write and tell us. The first 10 correct answers we receive will win T-shirts. Send your answer, your name, address and T-shirt size to:

### What Is It?

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putting a tax on tea. So they disguised themselves as Indians, boarded the English ships and threw all the tea into the harbor. It's a little known fact that every year England sends us a bill for that tea. Every year, we refuse to pay.

## KOOLER MOMENTS in HISTORY

In 1773, citizens of colonial Boston were angry at England for

You know you're Kooler when

## I didn't know that!

Americans eat more fruit, up to 18 pounds per person per year.

**Kooler Kids**

Michael Sassoon is 13-years old and lives in Fort Lauderdale, Florida. Even though he's an American kid, he's a rock star in South America. Michael has been making records since he was eight years old. Today, he's at the top of the charts in Venezuela and Bolivia. He's a hit in Bogota, Colombia and more than 14,000 kids came to his Halloween concert last year. He wants to be a teen star in the U.S. too. His new album will be out sometime this year. If you're a Kooler Kid or know of one, send us your photos and letters.



# Ask Dr. Know

Dear Dr. Know,

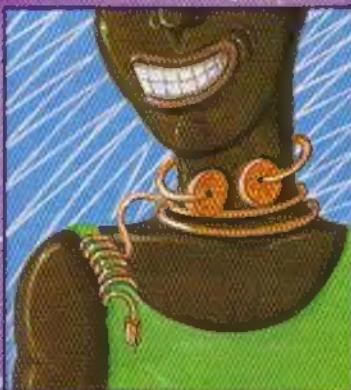
It's spring and everyone who is coordinated is trying out for some team or another. I bump into things all the time. I trip. I fumble. I lose my glasses. Is there a sport for me?

Hopefully,  
Uncoordinated

Dear Uncordinated,

All sports are for you. Sports are a great way to develop coordination and a good sense of how your body moves. With practice and patience anyone can play some sport. Choose a sport that you like a lot and then work at it. If it's baseball, you can't expect to go out and pitch a no-hitter the first time you step onto the mound. Paint a square on an old fence. Practice throwing a ball into the center. You'll see improvement in no time.

Mail your Kooler questions to Dr. Know.



your little stereo  
doesn't work anymore,  
but you wear the  
headphones anyway.

Mail us your ideas!

# Hot Stuff

## Leg Up

Tie a bandana above your knee. Use a different color every day.

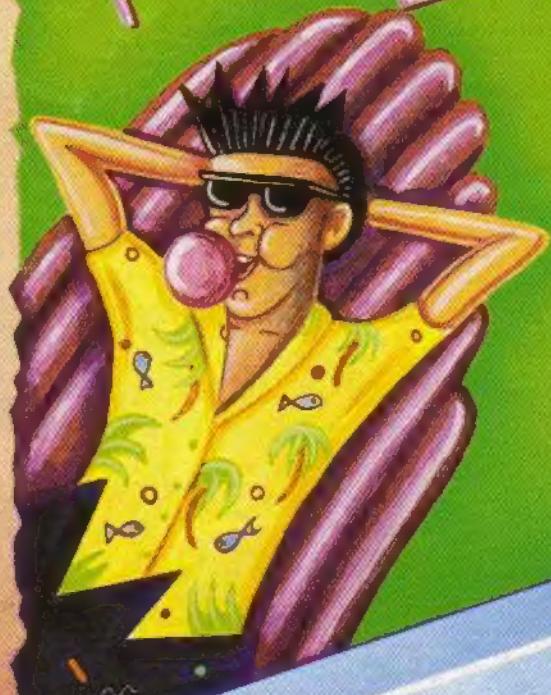
## Big Time

Dress for spring training. Wear a big, bright plastic stopwatch.

## Green Thumb

Start a garden—plant flower seeds in eggshells.

Send your photos and letters to:  
General Foods Promotional Services Center  
Kooler News, P.O. Box 4810  
3 Stuart Drive  
Kankakee, IL 60902

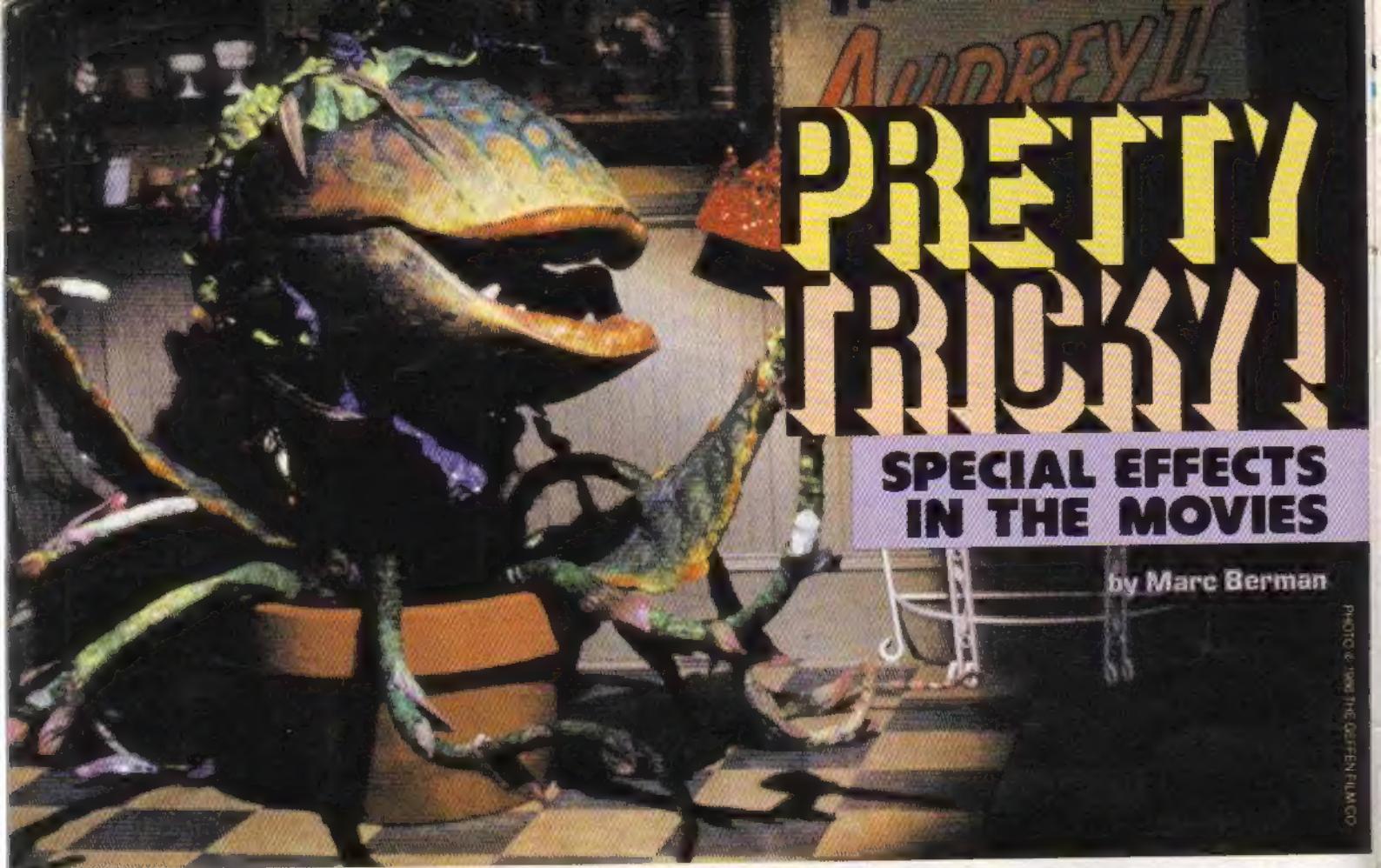


# HEY KIDS! Make it Kooler!

with **Kool-Aid  
Koolers**  
JUICE DRINK



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# AUDREY II

# PRETTY TRICKY

## SPECIAL EFFECTS IN THE MOVIES

by Marc Berman

You gobble down another handful of popcorn, while up on the movie screen a police car chases a glowing spaceship. Or a dog-monster prowls the night. Or heroes hang high above roaring rivers. Or planets explode. How on Earth do movie-makers make these out-of-this-world happenings happen?

The mystery of these magical moments has a single solution: Science! Using tools as simple as foam rubber or as powerful as the latest computer, film-makers make the impossible seem real through the science of "special effects."

Take flying, for example. It's hard—well, impossible—to find a human actor who can do it. But special effects can put a picture of an actor into a picture of the sky. The movie audience "sees" a flying human.

The same special-effects trick that gets super-heroes into the sky can be used to combine any two separate images on a single piece of film. It's a trick that the makers of the Indiana Jones movies have used to get Indy into tight spots.

### Cliffhanger Blues

At one scary moment in "Indiana Jones and the Temple of Doom," for example, Indy, played by Harrison Ford, is hanging on the side of a cliff

while water gushes out of a mine tunnel a few feet away. You can bet your bullwhip that Harrison Ford wasn't hanging on any mountainside when the scene was filmed. He was safe inside a studio. What really matters is that he was standing in front of a blue screen.

That blue screen worked wonders. Because of the way movie film is made, scientists can make a pure blue background disappear when they develop the film in the laboratory. In this case, when the background disappeared, the film-makers had a picture of Indy hanging in thin air—Indy without the mountainside.

The next step was to get a picture of the mountainside without Indy. To do that, the film-makers took a black silhouette (an outline picture) of Indiana Jones and placed it in front of a film of the mountainside. Then they re-filmed the film. The result: A film of the mountainside with a black spot in the middle that was the same shape as Indiana Jones.

The final step was easy. Using special machines, the film-makers put the image of Indiana Jones into the black spot on the image of the mountainside and—look out for that gusher, Indy!

1



2



### How To Get Indiana Jones Into Trouble.

1. Film-makers started with an image of a cliff.
2. Harrison Ford "hangs" in front of a blue screen.
3. This silhouette "hole" was placed on the cliff image.
4. It's all put together, and Indy fills the hole.

**Left:** Camera tricks, robotic controls and as many as 40 puppeteers at a time brought the twelve-and-a-half-foot-tall Audrey II to life in last year's "Little Shop of Horrors."

3



### Moving Monsters

Blue-screen shots may be complicated, but some special effects are as simple as a foam rubber doll. In fact, dolls are exactly what the makers of "Ghostbusters" used for the devilish dog monsters in the hit movie.

To get the dolls to move like living creatures, the film-makers used a technique called stop-motion animation. Animation is easy, but slow to make. The "Ghostbusters" camera operator would shoot less than one second of film. Then special-effects expert Randy Cook would move the dog doll's legs, neck and shoulders a tiny bit. Then the camera operator would shoot the next bit of film. It took 23 hours to film one animation scene. But moviegoers only saw the dogs moving for a few seconds.

Model-making is another important part of special effects. Often film-makers build miniature →

What put the fur on this  
Teen Wolf's face? Don't blame  
Michael J. Fox's mom and dad.  
It's the special-effects people who did it.

streets or spaceships or skyscrapers. The models are filmed close-up, so their images fill the frame of the film. When the film is played back, the models look full-size.

That's how the makers of "Close Encounters of the Third Kind" created the scene where a police car follows a flying saucer. The country road in that scene was actually a miniature set built on a table top. It was made of wood, plaster, pebbles and some of the tiny fake shrubs that people use with model train sets.

### **Kid Stuff**

Michael McMillen is the man who built the country road set. Like many other special-effects whizzes, he started making models when he was a kid.

"My dad set up a piece of plywood on some saw-horses in our driveway," he told CONTACT. "I built mountains on it out of sand. I stuck twigs in the sand to look like trees, and set my toy trucks in the scene too. I hung a sheet on a clothes-line behind the scene for sky. Then I took snapshots

and showed them around. I could tell I was doing it right if I could fool adults into thinking the photos were real landscapes."

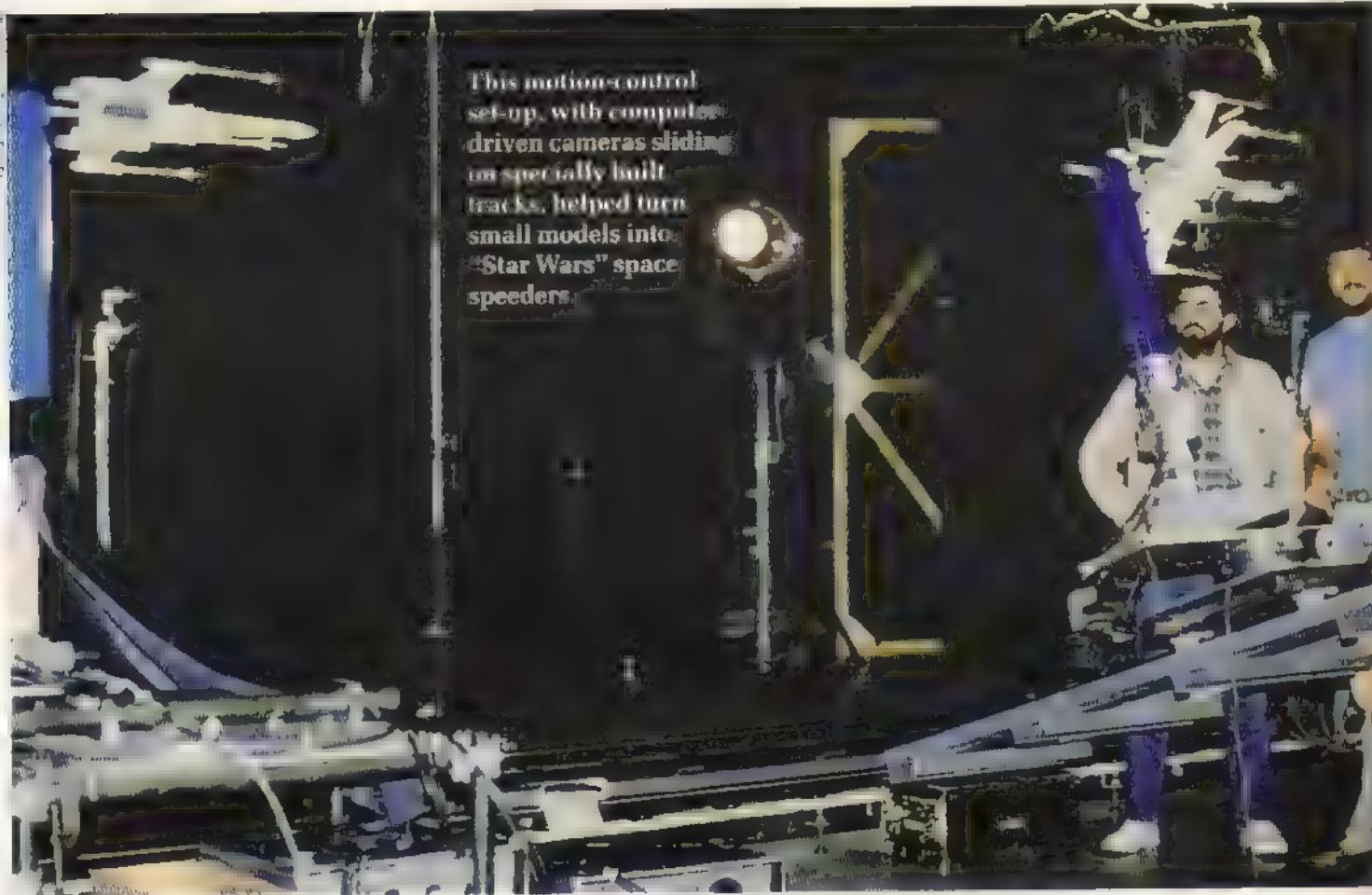
Michael also built a spaceship model for "Close Encounters." It was made of molded plastic and had neon lamps inside. Michael painted much of the plastic black, so the neon light glowed through only a few places.

When you watch "Close Encounters," you see that spaceship soaring. But unlike the dog-monsters in "Ghostbusters," it wasn't animated. In fact, it wasn't moved an inch. Instead, the camera moved! That's another special-effects trick. It's called motion control.

### **Computer Control**

In motion control, a computer runs the camera. Special-effects people program the computer to move the camera forward and back, up and down, or side-to-side. That way, the camera can repeat the exact same moves over and over to get the perfect shot.

The "Star Wars" movies used motion control not



This motion-control set-up, with computer-driven cameras sliding on specially built tracks, helped turn small models into "Star Wars" space speeders.

**Below:** Alien visitors? No—just a combination of models, blue-screen shots and lifelike background paintings from "Close Encounters of the Third Kind."



**Above:** The image of this foot-tall model filled movie screens in "Ghostbusters." Stop-motion animation made it move.

**Below:** Stop-motion animators adjust Imperial Walker models for "The Empire Strikes Back." The lower picture shows the final effect.

only to create the illusion of moving spaceships, but also to give audiences the feeling of flying in space. To make one scene, a motion-controlled camera followed a miniature spaceship along 80 feet of track, swooping and swaying all the way. The result? An exciting space chase.

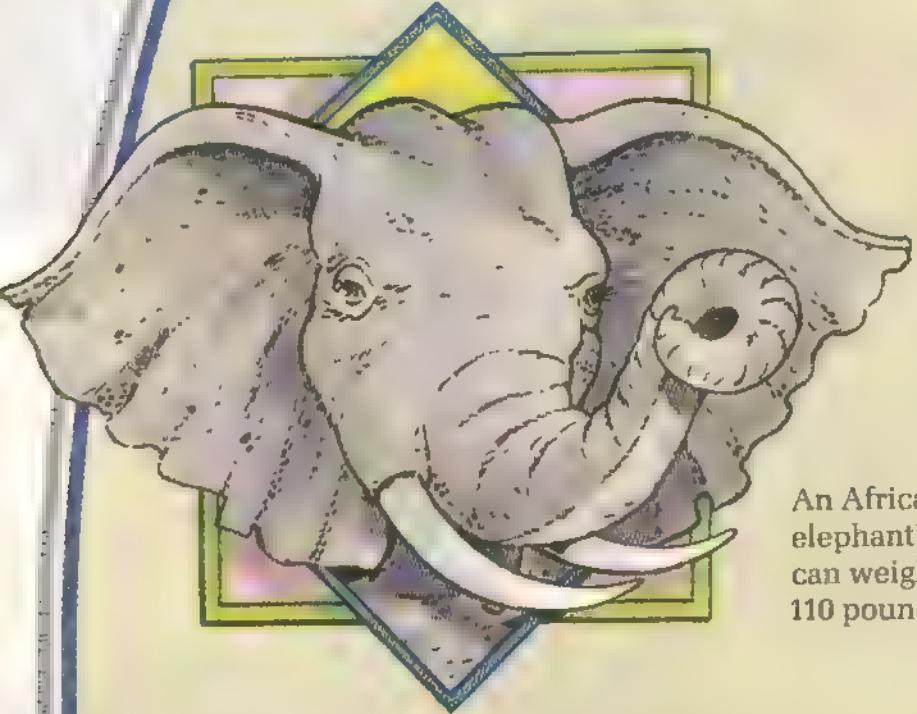
Even an actor's make-up can be part of special effects. When an actor turns into a werewolf, or someone's belly grows fat before your eyes, or a person's head spins around, a make-up effects artist makes it happen.

Make-up effects are more than fake noses, chins and hair. For one movie, make-up-effects expert Carl Fullerton had to make horns grow out of an actor's head. He solved the problem with a model and a motor—a rubber model of the actor's head with a small electric motor inside. When the motor started, the horns rose out of holes in the head.

That's a good example of the way special-effects professionals use their heads to make amazing things happen in the movies. They're always thinking up new ways to use science to surprise movie-goers. But you'd never notice it as you sit munching your popcorn. In the dark of a movie house, special effects are just plain fun. 

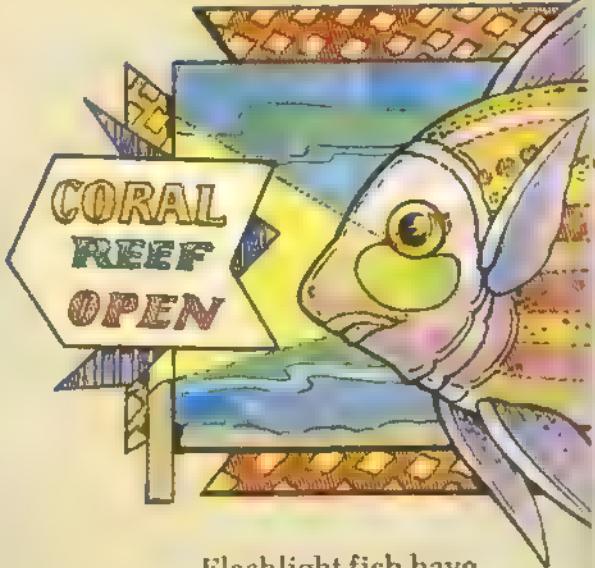


# Factoids



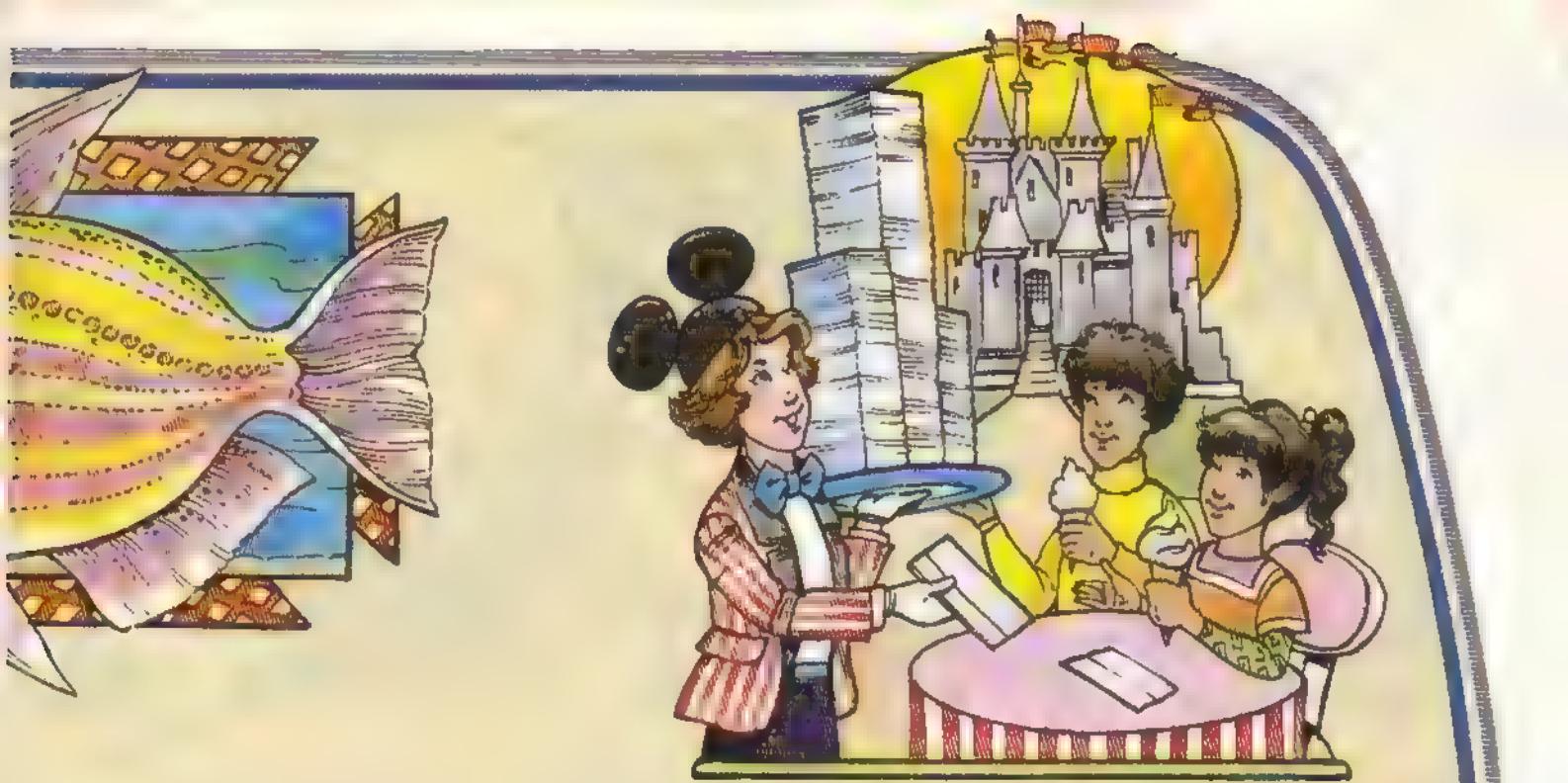
An African elephant's ear can weigh 110 pounds.

The average American uses about one pound of toothpaste a year.



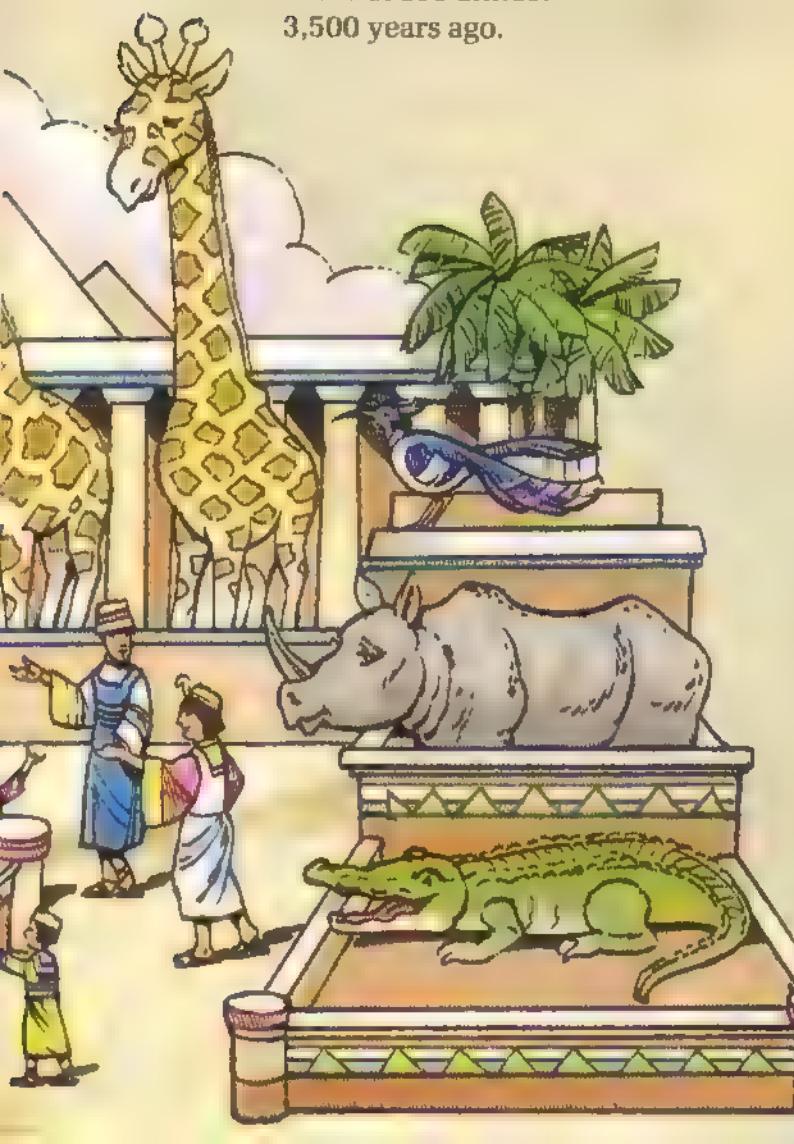
Flashlight fish have tiny bacteria under their eyes. These bacteria give off enough light for a person to read a watch by.



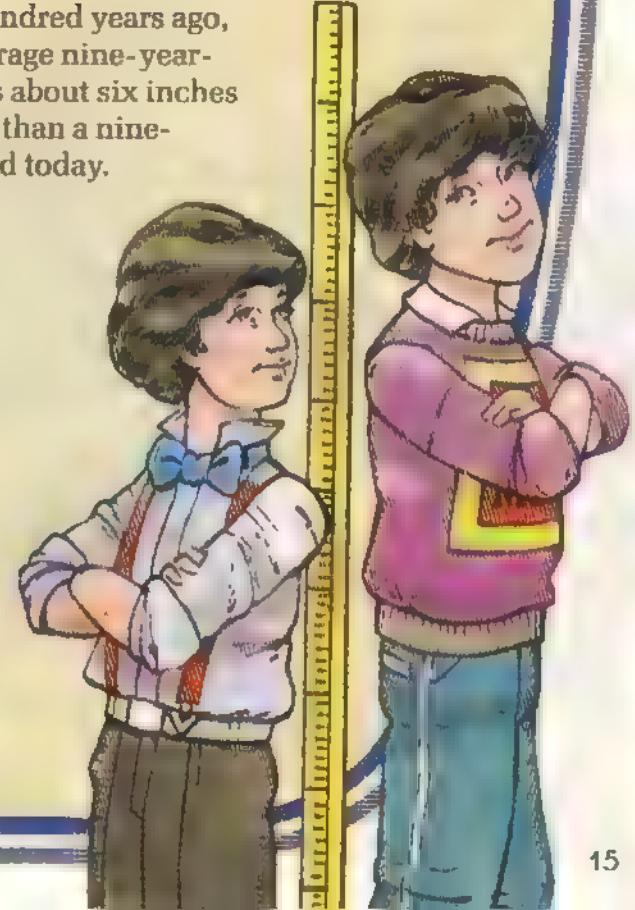


Last year, visitors  
to Disneyland used 26 million  
paper towels.

Egyptians built  
the first zoo almost  
3,500 years ago.



One hundred years ago,  
the average nine-year-old  
was about six inches  
shorter than a nine-year-old today.



# THE BLOODHOUND GANG

## The Case of the Cracked Crystal

by Becky Cheson

**W**ould you turn that down a few decibels, Ricardo?"

Vikki and Skip were straightening up the office while Ricardo danced to the sounds blasting out of his cassette recorder.

"It's the latest song by The Untouchables," said Ricardo. "They're playing at the block party tonight!"

"What a great day for an outdoor party," said Vikki, looking out the window.

"Uh-oh," said Skip. "I see a storm approaching."

"Where?" asked Vikki. There wasn't a cloud in the sky.

"It's getting out of that cab down there."

"Not another case," groaned Ricardo.

There was a knock on the door and Vikki opened it. In walked Dave Madison, an elderly gentleman in a crisp linen suit. Madison had thick grey hair, and his long, thin fingers were very delicate—like the items he sold in his fancy gift shop, The Emporium.

"Break it to us gently," said Skip. "You've got a case for us, right?"

"A poor choice of words, young man," said Madison. "You see, 'break' is precisely what has occurred."

"Somebody broke into your shop?" asked Vikki.

"No," Madison replied. "Somebody broke up my shop!"

"Isn't that a simple matter for the police?" she asked, turning to Madison.



"I'm afraid there's nothing simple about it," said Madison. "Come see for yourself."

### Crystal Clear Clues

The taxi took them to the other side of town, to The Emporium.

"Hey, I know this neighborhood," said Ricardo. "The Untouchables have their rehearsal studio right around here."

"Keep your mind on the case," said Vikki.

Soon they arrived at the gift shop. The floor was covered with glass. Vikki looked around at the shop where, usually, shelves of fine china, crystal and stoneware were neatly displayed. It was a mess—but there was something odd about the destruction.

"Whoever did this only broke the glass things," said Vikki.

"That's right," said Madison's salesgirl, Erica Lane. "And whoever it was certainly had taste. He or she went straight for the good stuff."

"What do you mean?" asked Skip.

"Only the fine crystal is broken," explained Erica. She picked up a couple of inexpensive juice glasses. "These glasses are untouched."

"And they were on the shelf right next to those broken goblets!" Skip exclaimed. "How could that be?"

"Any idea how the vandals got in?" asked Ricardo.

"No," said Madison. "Neither door appears to have been tampered with."

"That brings us to the next question, Mr. Madison," said Ricardo. "Who has keys?"

Madison and Erica looked at each other. "Just the two of us," said the salesgirl.

"All right," said Skip. "We'll start with you, Erica. Where were you last night?"

"At home!" Erica replied. She sounded offended. "You can check with my roommate if you don't believe me!"

"And you, Mr. Madison?" asked Vikki.

"This is absurd!" he replied. "If you must know, I was at home as well. Besides, why would I want to destroy my own property?"

Just then, Skip came out of Madison's office, carrying a file folder. "I think I might be able to answer that question!" he said. "Mr. Madison, did you take out a new insurance policy?"

"Yes," answered the shopkeeper, "but what does that have to do...you don't actually believe I did all this just for the insurance money?!"

"Wait a minute," said Vikki. "We're assuming the damage was done from the inside. But what if it was done from the outside?"

## A Break In The Case

Two hours later, the sleuths were still snooping around outside looking for clues. Suddenly, Skip let out a yelp. He had found the vandal's tool of destruction!

"Look, it's a slingshot," he said to Vikki. "With this, the vandal could have hit anything he wanted."

"Sure," said Vikki. "There's just one problem: How would the rocks get to the crystal?"

"Are you nuts?" said Skip. "Through the window!"

"Look!" said Vikki, pointing to the shop's display window. It wasn't even scratched.

"This is hopeless," Skip moaned, throwing the slingshot away. "I don't know about you but I'm ready to give up."

Just then, Ricardo came walking around the building.

"Ricardo, where have you been?" Skip asked.

"Just around the corner," he answered. "I was right, The Untouchables have their studio right next door. Man, you should see their new amps and speakers."

"That's it," said Skip. "I'm getting ready to go to the block party!"

## Party Crashing

"Hey, Vikki—get with it!"

Ricardo came hopping by in a sweaty T-shirt as The Untouchables finished up their last set. Scores of kids were having a great time dancing at the block party. But Vikki's mind was somewhere else.

"Sorry, guys," she said. "But it bugs me that we got nowhere with that case today."

"We'll get it first thing in the morning," said Skip.

"If I've got any eardrums left," said Vikki. The Untouchables had their amps turned up to the max.

"Hey! Aren't you guys the famous detectives?" Skip couldn't believe it. Ricardo looked like he was going into shock. Jack Carroll, lead singer for The Untouchables, was heading their way. He introduced himself and shook hands all around.

"Vikki!" Skip whispered. "What is it?"

She was staring right through the musician. →





"I've just had an idea," she said. "Let's get back to this case tonight!"

Ricardo explained to Jack what had happened at The Emporium.

"We're heading back to the rehearsal studio now," said Jack. "We can give you a lift."

## **A** Shattering Conclusion

**A** Madison and Erica Lane were still cleaning up the shop when the Bloodhound Gang arrived. Vikki also invited Jack Carroll along to observe the investigation.

"Did you find anything?" Madison asked.

"I've got a theory," said Vikki. "But before I explain, Mr. Madison, I'll need two matching crystal wineglasses, some water, and a hat pin."

When Madison found these items, Vikki placed them on a table, and everyone gathered around. First, she tapped each glass with a pencil, producing a ringing tone. Then she poured a small amount of water into each glass and tapped them again.

"What are you doing?" asked Jack.

"I'm going to tune these glasses so that the tones they produce are identical," she explained. "Adding water lowers the tone, and removing it raises the tone."

"Not exactly a new trick, Vikki," said Skip.

"Watch," said Vikki. Carefully, she placed the hat pin so that it lay across the rim of one glass. Then she moistened her finger and rotated it around the rim of the other glass. The glass began to ring with sound.

"Look at the other glass!" Erica exclaimed. The hat pin was jiggling around!

"Resonance," said Vikki, proudly.

"Resonance?" asked Madison.

"We studied it in school," said Vikki.

"Do tell us more," said Ricardo.

"We all know that sound waves are caused by vibrations," said Vikki. "Well, resonance happens when sound waves from one source, like this glass, cause another object, like this second glass, to vibrate."

"But why did you tune the glasses?" asked Erica.

"Because sound waves only produce resonance in objects that are tuned to the same frequency," Vikki explained.

"Sympathetic vibrations!" said Jack. Suddenly, he looked very unhappy.

"And if the sound is loud enough, the vibrations in the glass get larger until it breaks apart," Vikki continued.

Jack was shaking his head. "Oh no!" he groaned. "We were rehearsing next door with our new amps last night!"

"Wow!" said Skip. "Music caused all this?"

Madison still looked puzzled. "But why didn't all the glass break? Why just the crystal?"

"Most objects don't vibrate that easily," Vikki answered. "But high quality crystal — especially in a circular shape — does."

"How did you figure it all out?" asked Jack.

"At the party tonight, I just put two and two together," Vikki explained. "I heard you got new amps yesterday. And I noticed that the high tones, like the lead guitar and the saxophone, were the loudest. High frequencies usually set off sympathetic vibrations best."

"Well," said Ricardo, turning to Madison. "I guess you'll want to press charges."

"Wait a minute," said Jack. "I've got a better idea. I'm really sorry about this, Mr. Madison. What if The Untouchables use the profits from our latest record to replace your merchandise?"

"That," said Madison, "sounds like music to my ears!" 

**Watch for next month's  
Bloodhound Gang  
mystery!**

# Spy Scope

A periscope is something that lets you see where you otherwise couldn't. Using it, you can peek over walls and peer around corners.

## What You Need

long narrow box, such as a quart milk carton  
2 small mirrors that will fit inside the box  
scissors  
tape  
ruler

## What You Do

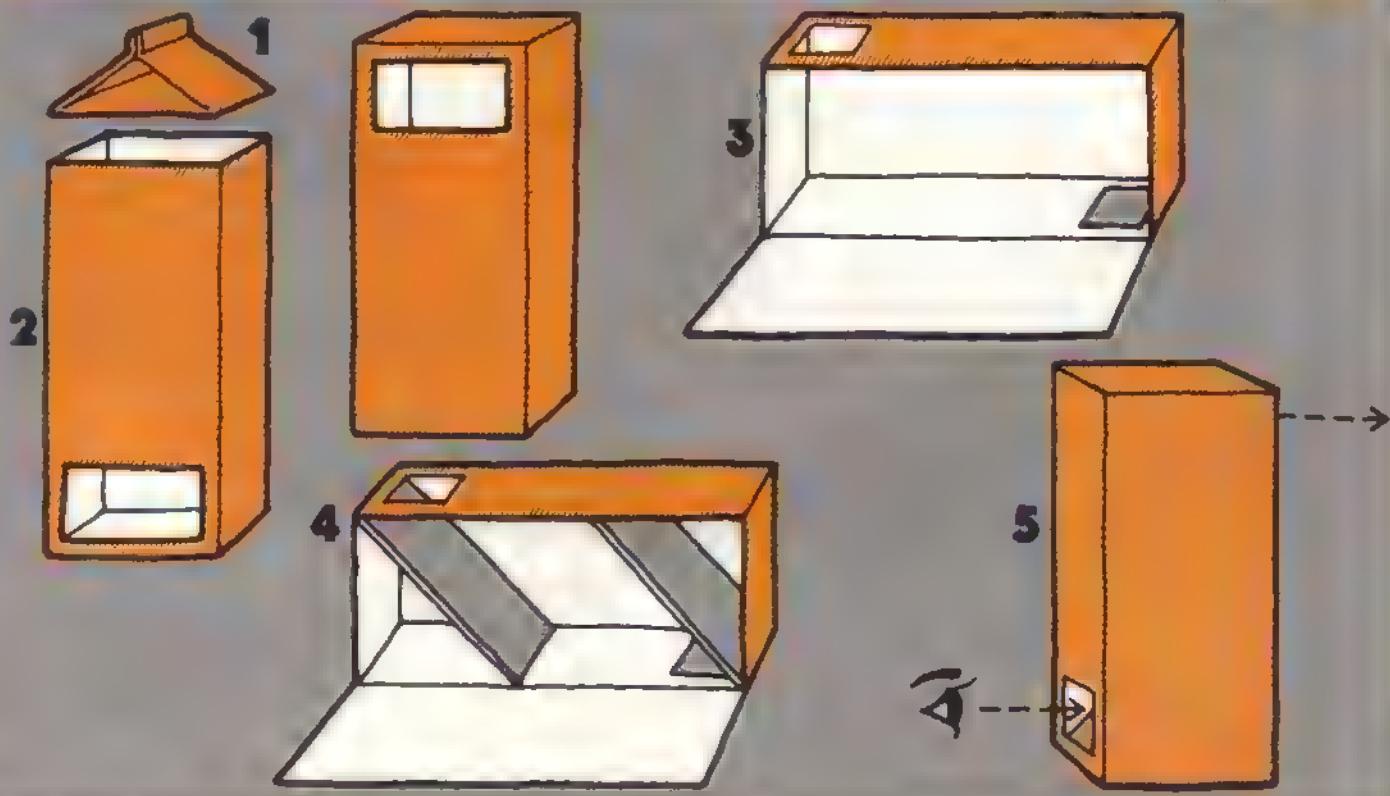
1. If you use a milk carton, cut off the pouring end. After you put the mirrors in, you can tape a piece of cardboard over the hole.
2. Cut a large peephole at the bottom of one long side of the box. Do the same to the other side of the box at the other end.  
(See picture)
3. Open out a long side of the box that doesn't have a hole. Now it's easier to put in the mirrors.

4. Put one mirror in the corner of the box. Make sure that it is on a slant, and that you can see it by peeking in the peephole. Tape it in place. Now put the other mirror near the other peephole. Glue this one on a slant, too. If you have done this right, the two mirrors should sort of face each other. (As in picture 4.) Reseal the box.

5. Try your periscope by holding it with the top hole just above a window sill, facing out. People won't know you're looking at them. If you can't see anything, try moving the mirrors a little. They must be placed just right for your periscope to work.

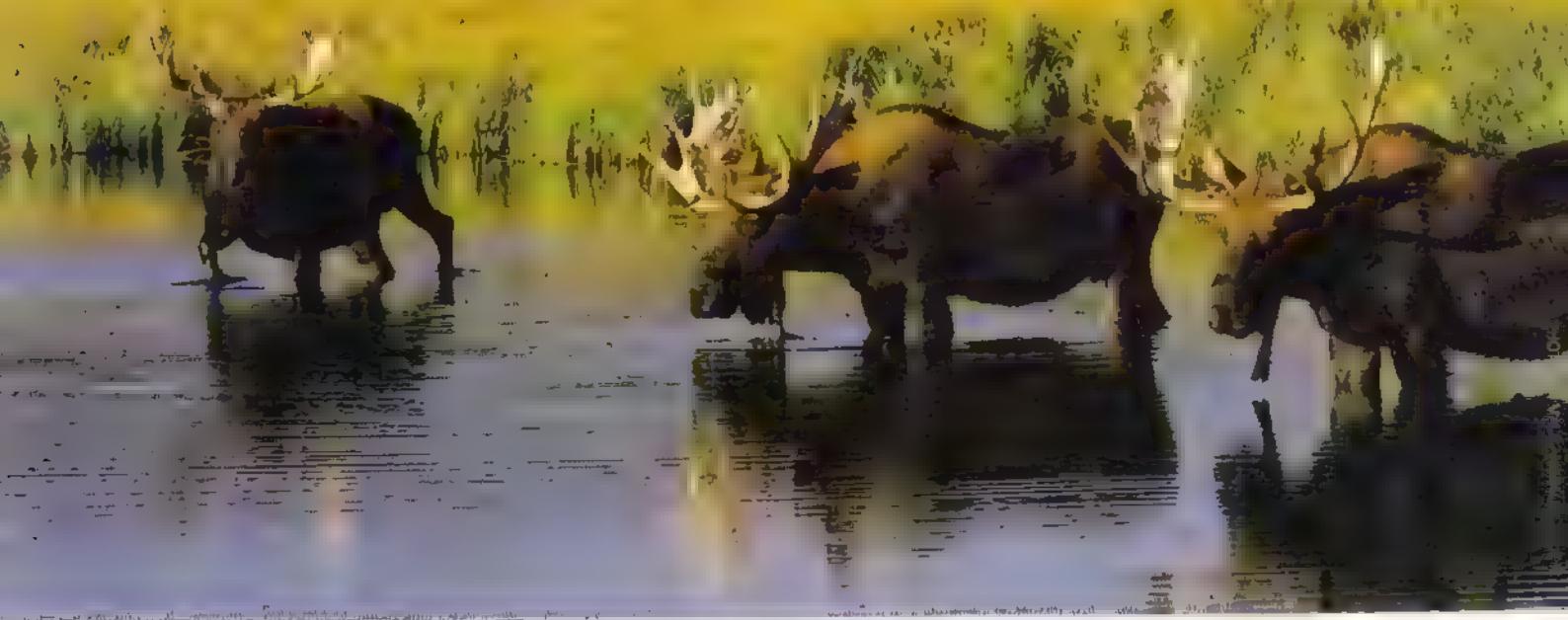
## Why It Works

The rays of light strike the top mirror and, bouncing off it, travel down to the bottom mirror. The light then bounces off that mirror and into your eyes. So what the first mirror sees, you see, too!



# Wild Moose Chase

THIS SHAGGY ANIMAL IS MAKING A COMEBACK



"Call me if you see a moose."

That's what Dale Garner says to people when he hands them his business card. He's not always home to get the calls, though. Most of the time he's off on a wild moose chase.

For the past year, Dale Garner has been tracking moose in the Adirondacks, a mountain range in northern New York. A graduate student at the State University of New York in Syracuse, Garner is studying the first moose to be seen in New York since the 1860's!

"Since about 1980, we've seen a lot of moose come into New York," says Garner. That's why the state government is doing a special moose study. Garner thinks that about 15 to 30 moose have moved into the area of the Adirondack State Park. He and other researchers are trying to find out why the moose are coming back, how they will adjust to their new surroundings and what humans can do to help them.

## More Moose

New York is not the only state with more moose these days. Maine, New Hampshire and Vermont have all had moose population explo-

sions in recent years. In fact, Garner thinks the moose in New York wandered over from Vermont when things started getting too crowded for the moose there.

It's not hard to understand why the moose is making such a comeback. "In the late 1700's and early 1800's, everybody was out shooting moose," says Garner. Now, most states have outlawed moose hunting. Also, a hundred years ago most of New England and New York was farm country. Now forests have regrown in many areas—and forests are the moose's habitat.

When he began his moose study, Dale Garner knew nothing about the animals. "I knew they had big noses, big lips and big antlers—and that's about it," he told CONTACT.

Now, Garner has read mountains of moose books and logged thousands of miles hot on the moose trail. Last year, he even traveled to Canada to attend the North American Moose Conference. You might call him a moose expert.

To find out more about the moose in New York, Garner keeps track of several of them with radio collars. The collars send out signals to let

Garner know where the animals are. But it's not quite so simple. First, you have to get a moose to stand still long enough to put the collar on it!

Garner uses a team of five, including a veterinarian, to put a radio collar on one moose. A powerful tranquilizer keeps the moose quiet during the operation.

"I have my truck packed with gear all the time," says Garner, "so if someone calls and says, 'Hey, I just saw a moose,' I'm ready.

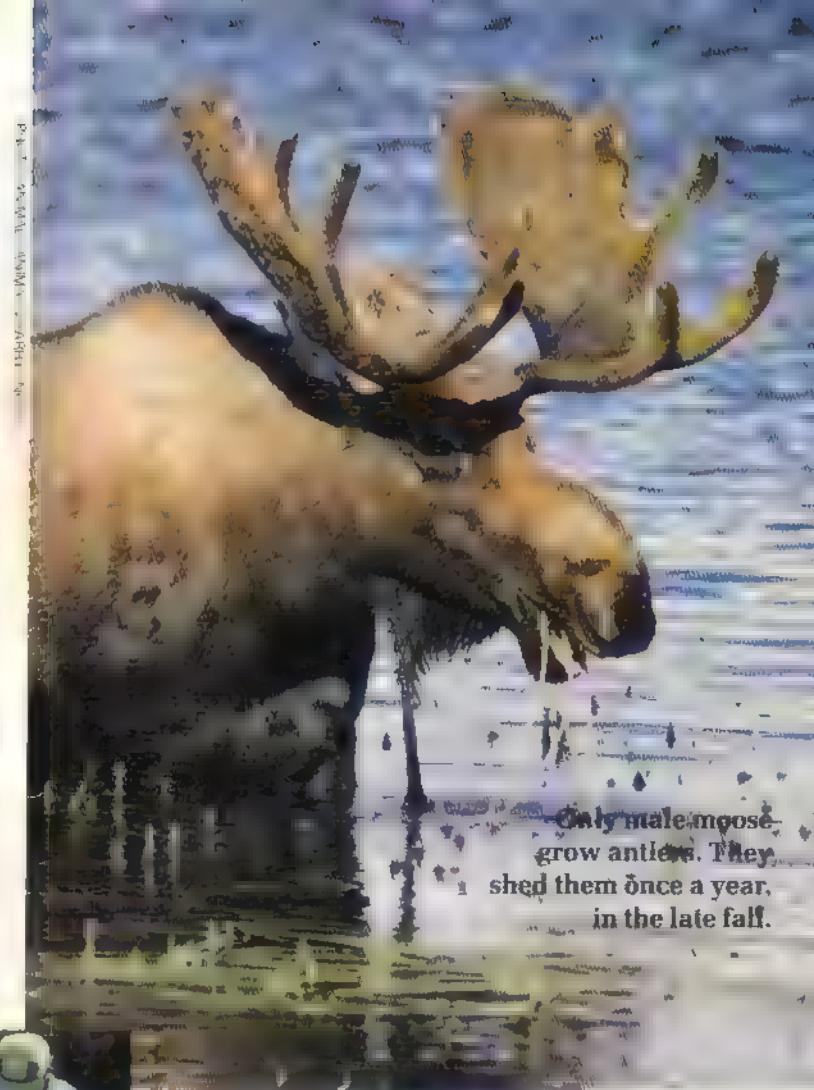
"Once we find an animal, we shoot it with a tranquilizing dart. It becomes sleepy and goes down, and we put a radio collar on it."

The team also puts metal ID tags on the moose's ears. They check its age by seeing how worn down its teeth are, then they measure the animal and take a blood sample.

By the time he'd collared his fourth moose, Garner had a personal speed record: "Nineteen minutes, eight seconds from the time I darted it to the time it was standing back on its feet."

### Moose Mates

Once Garner puts a collar on a moose, he can keep a record of where it goes. He often →



Only male moose grow antlers. They shed them once a year, in the late fall.



**Left:** Dale Garner and his moose tagging team put a radio collar on Moose No. 2.



**Right:** Moose No. 2 back on its feet, shows off the latest in New York moose fashions.

goes up in an airplane, where he can pick up a radio signal from 15 miles away. On the ground, Garner uses an antenna, a compass and a computer to figure out an exact location on a map.

By keeping records, Garner and other researchers hope to learn more about moose's habits. For example, they have learned that a male moose will go to great lengths to find a mate. Most of the time a moose's home range (the area it usually stays in) is about 10 square miles. But last fall, during breeding season, Garner tracked one male that traveled over 300 miles searching for a mate. The moose had to travel so far because there are few female moose in the Adirondacks. In fact, the search was so exhausting that the moose got sick and died.

Another male, called Moose No. 2 in Garner's records, decided to accept substitutes: He started hanging around a cow. Some farmers were understandably upset. "We had to move him to another territory," says Garner.

### Moose Meals

From the moose's location, Garner can even tell what the animal is eating! He keeps "vegeta-

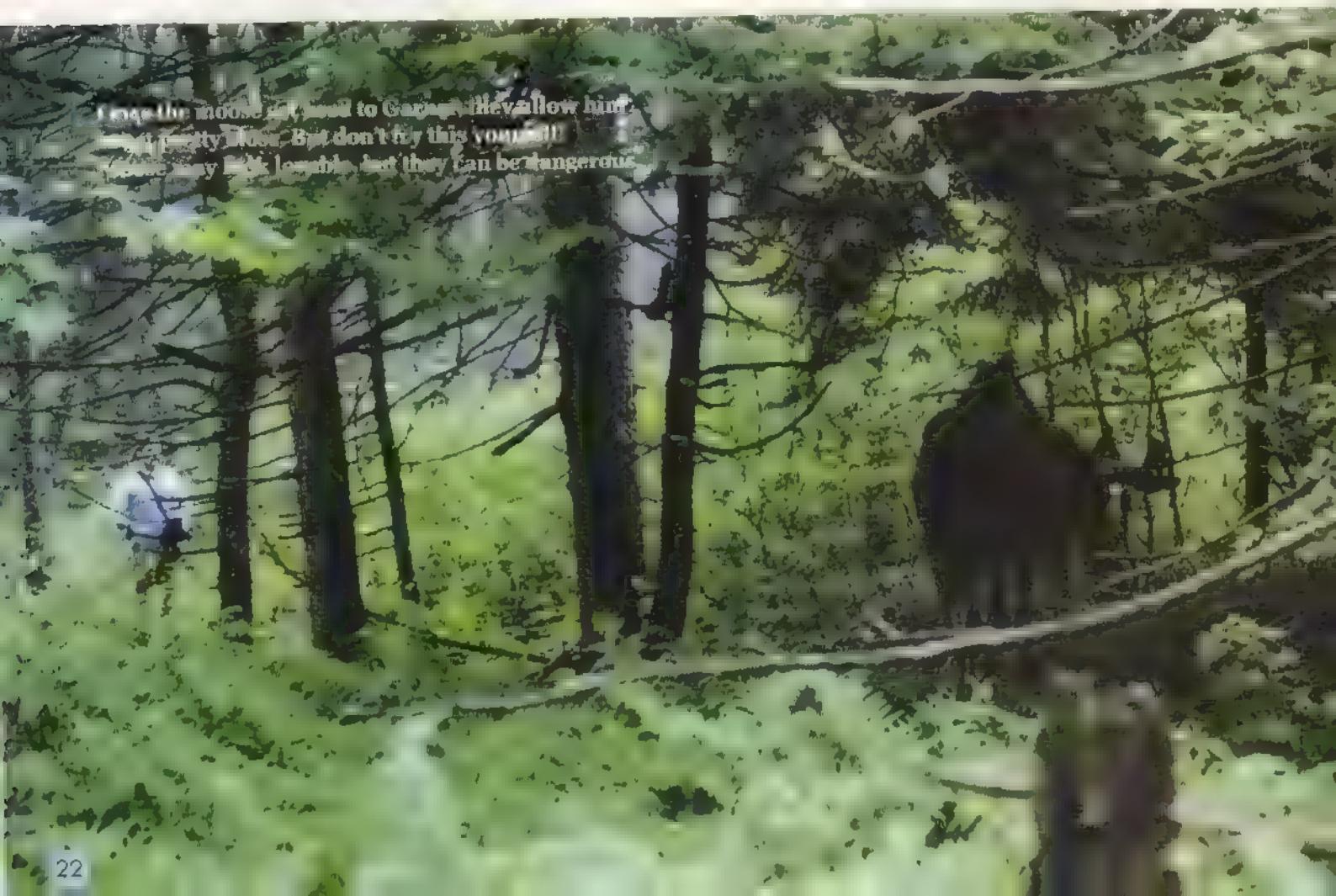
tion maps" that tell him what kind of moose food is available in different places.

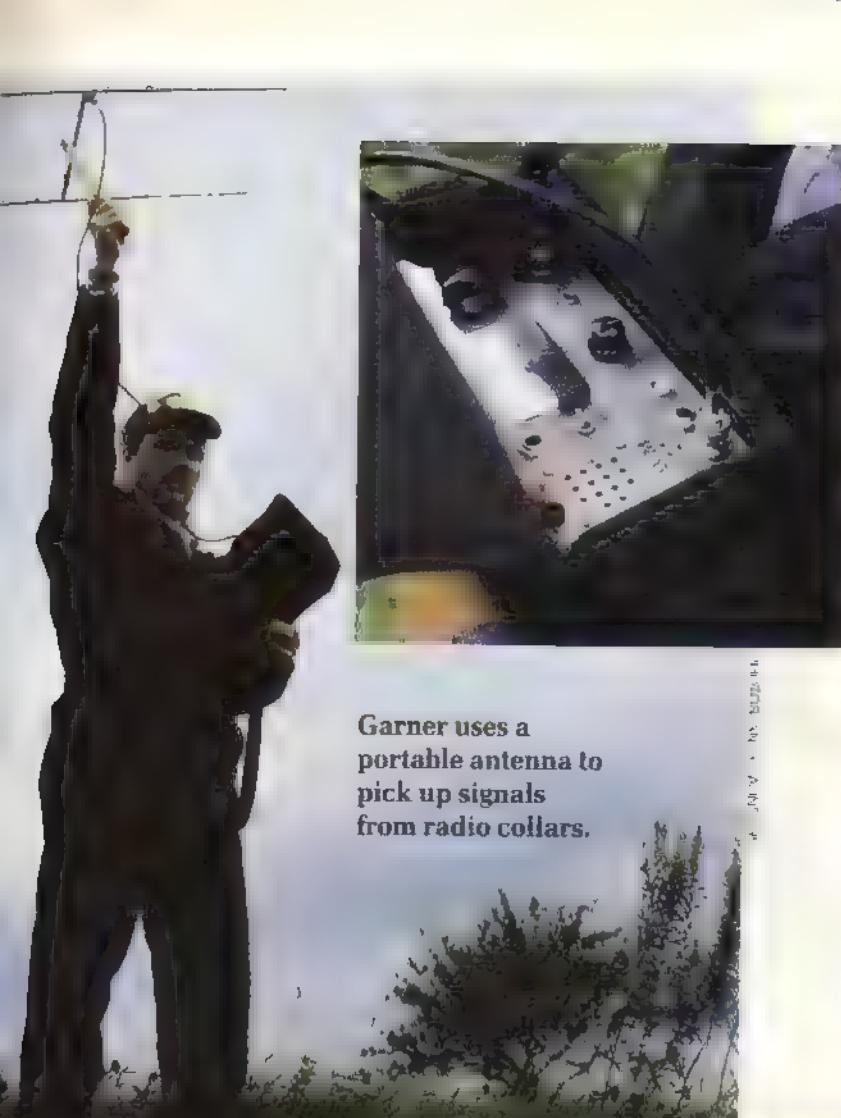
What does a nine-foot-long, 1,200-pound moose eat? Anything he wants, of course! And what's that? CONTACT asked Kristine Klein, a moose biologist in New Hampshire. In that state, there are more than 1,600 moose!

"A full-grown moose can eat from 20 to 35 pounds of dry matter a day," says Klein. "They like to eat the tender tips of trees and shrubs."

So far, Garner has seen moose eat balsam, fir and maple trees. "They'll grab onto a twig and strip the leaves right off it," he says. During the fall and winter, moose eat shoots and twigs. In the summer, they feed on water plants like pond lilies. They spend a lot of time in water, possibly to keep off flies and insects. And they're well adapted for watery meals, with big wrap-around lips for easy grasping, and valves to close off their nostrils.

A lot of people write Garner to ask questions about moose. And sometimes he takes moose fans along when he goes on his "moose watches." Why are moose so popular? Maybe it's the way





**Garner uses a portable antenna to pick up signals from radio collars.**

**Left:** This portable tracking device tells Garner which direction the radio signal is coming from.

they look. Or maybe it's their personality.

Moose don't have to worry about other animals. Only black bear and wolves attack moose, and in New York and New England there are no wild wolves and few bears. The only other natural enemy of moose is a small parasite called a brain worm. Because of this, says Garner, "moose don't show a lot of fear."

Still, if you see a moose, approach with caution, warn both Garner and Klein. "A moose is not a big, easy-going dummy," says Klein. "They're just as wild as any other wild animal." Although moose become used to people quite easily, they can be unpredictable, and even dangerous, especially during the fall breeding season.

So if you run into a moose give it plenty of antler room. And if you happen to be in New York and you see a moose, don't forget to call Dale Garner! ☺



# Experiment

## Make Your Own Forest

Make a terrarium—a glass container filled with growing plants. It's a great way to bring a bit of spring indoors—all year 'round!

### What You Need

large glass container or aquarium	small shovel
small plants	paper cups
gravel or tiny pebbles	plastic food wrap
soil	water

### Getting Your Plants

Since it's spring, why not find your terrarium plants outdoors? Open fields, woods and backyards are good places to look. When you find some plants you like, make sure it's okay to dig them up!

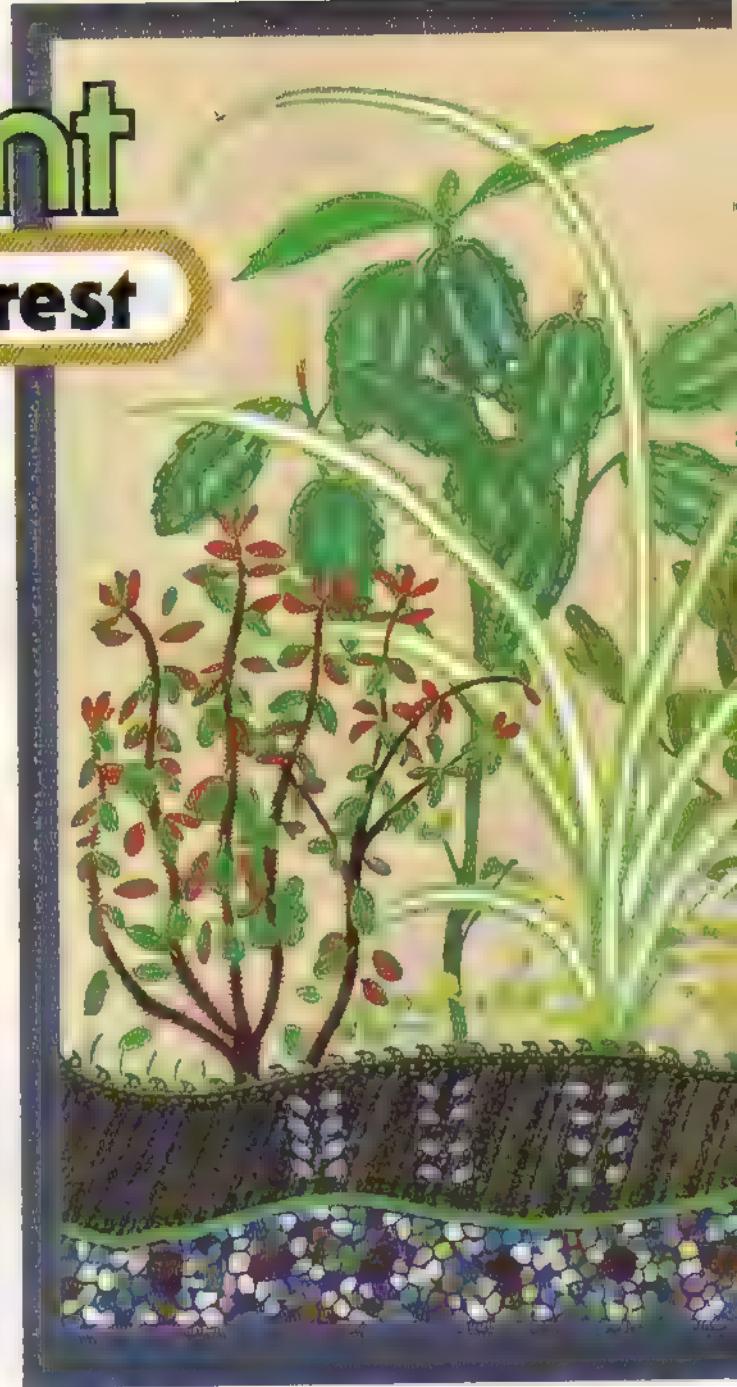
Dig up the plants. Be sure to get as much of the root as possible. Bring the plants home in paper cups. Keep the roots wet until planting.

If you live in a place where you can't dig up plants, you might want to buy a few small ones. Here are the names of some plants that grow well in terrariums:

aluminum plant	fittonia
baby's tears	peperomia
boxwood	philodendron
English ivy	prayer plant
ferns	spider plant

### Putting Your Terrarium Together

1. Wash and dry the glass container.
2. Put gravel or pebbles at the bottom.
3. Add soil deep enough to cover plant roots.
4. Plant each plant deep enough to cover its roots.
5. Water the terrarium. Soil should be damp, not soggy. You won't have to water it often.



But check now and then to see that the soil isn't dry.

6. Decorate the terrarium with colored stones, shells or other things you find outside.
7. Cover the top tightly with plastic wrap.
8. Your terrarium is ready. Put it in a place with lots of light, but not direct sun. Enjoy!

### Why It Works

You wouldn't last long in a closed container, but it doesn't harm plants. You need oxygen to breathe. As soon as the air in the container was used up, that would be all for poor you. But plants



ILLUSTRATION © KAREN BALMAN

don't run out of the carbon dioxide and oxygen they need. They can turn carbon dioxide into oxygen, then turn oxygen back into carbon dioxide. The same air is used again and again.

Water in a terrarium is used over and over, too. The plants take water from the soil, then release it through their leaves as water vapor. Water vapor cools and turns back into water. You can see the drops collect on the glass. The water then falls back into the soil to be used again.

The things that happen in your terrarium happen outdoors all the time. Earth has a limited amount of air and water that must be used again and again. Plants recycle the oxygen in the atmo-

sphere, just as they do in your terrarium. Without plants, people would soon run out of fresh air.

Nature's water cycle is like a terrarium, too. Water evaporates from the ground and goes into the air as water vapor. High in the sky, it cools, turns back into water and falls as rain.

### Add a Pet

Large terrariums make good homes for small pets, like turtles, frogs and toads. But like people, these animals need lots of air. If you keep a pet inside, poke some holes in the plastic wrap that covers your terrarium. You will also have to find out what to do to keep your pet healthy—including the right foods to feed it.

# Any Questions?

by Reba Weiser

## Why do animals have tails?

Different animals use their tails for different purposes. Animals may use their tails for communicating, for balancing, for warmth, for grabbing things or for just plain hanging around.

Sleeping dogs curl their tails around themselves to keep warm. When they're awake, dogs wag their tails to tell you they're happy. White-tailed deer communicate with their tails too. When there's danger, they raise their tails like flags to signal each other. Beavers signal each other by slapping the water with their tails.

Kangaroos are famous for their big curved tails, which they use for balancing as they bounce around Australia. Squirrels' fluffy tails help them balance when they run and jump. Monkeys also use their tails to balance as they jump through the trees. And, of course, they "hang around" with them too.

Water animals steer with their tails, as do animals that fly. Cows use their tails to flick away flies. And that's the tale of the tail!

Question sent in by Nicole Novou, Alhambra, CA.



## How do fireworks work? Sizzle!

Boom! Whoosh! Crackle! Pop! No, it's not a new cereal. It's the sound of fireworks! Fireworks are a mixture of gunpowder and other chemicals. When that dangerous mixture burns, it explodes with flames, beautiful sparks and lots of noise.

Fireworks work like rockets. First, fireworks experts pack all the ingredients into a tube. That includes coarse gunpowder, which sends the fireworks into the air when a fuse is lit. Once the rocket is high in the air, a finer gunpowder explodes, and the rocket breaks up. The explosion sets off many small firecrackers in the nose of the rocket.

The yellow, red, blue and green colors you see falling through the night sky are created by colorful chemicals. The sizzling, sparkling tails you sometimes see are caused by added charcoal.

But remember: Leave the fireworks displays to the experts. Fireworks can be very dangerous and can cause serious injuries. Never touch or buy fireworks yourself!

Question sent in by Ann Byler, Phoenix, AZ.

Do you have a question that no one seems able to answer? Why not ask us? Send your question, along with your name, address, and age, to:

Any Questions?  
3-2-1 CONTACT  
P.O. Box 599  
Ridgefield, NJ 07657

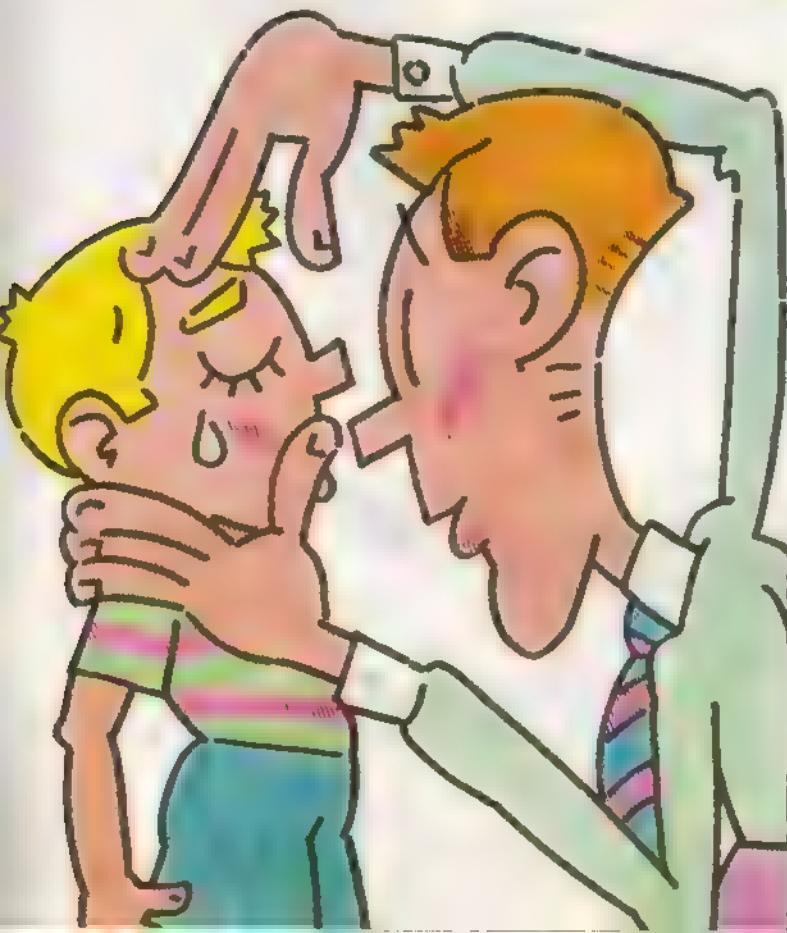
## Why do some objects glow in the dark?

You've probably worn some glow-in-the-dark items around your neck or have some in your sticker collection. Maybe you've tossed around a glowing Frisbee on a summer evening. All these glow-in-the-dark items work because of something called luminescence (loo-min-ESS-ents). That means light without heat.

Light is a kind of energy. When you allow light to shine on certain substances, they absorb some of the energy. Later, they release that energy—and glow. Other glow-in-the-dark substances are made by combining different chemicals that glow when they're mixed together.

Years ago, glow-in-the-dark numbers were painted on wristwatches with radioactive paint. That turned out to be dangerous for the watchmakers, so those watches are no longer made. Nowadays, toy makers add luminescent substances to hard plastic to make glow-in-the-dark toys. Leave the toy in the light for awhile and it will glow. Then you can play Frisbee in the dark—until the energy runs out.

Question sent in by Grey Sink, Clemmons, NC.



**What are eyelashes for?** Your eyelashes are part of a defense team that protects your eyes, two of the most sensitive parts of your body. That defense system includes your eyelashes, your eyelids, your eye muscles, your tears and even your eyebrows.

Let's say a piece of dust flies at your eye. Your eyelashes, sticking out over your eye, have a good chance to catch the dust. If they do catch it, your eyelashes automatically send a signal to your eyelid muscles. You blink. That keeps the attacker from hurting your eye.

Your eyebrows are a protective wall above your eyes. Often, they catch dust or tiny bits of dirt heading toward your eye. But if a particle manages to break through, and if it gets past your eyelashes too, your eye can take care of itself. As soon as your eye feels a strange object, it starts making tears. Soon the problem is washed away.

Question sent in by Patricia Ashley, Slidell, LA.

# LOOK AGAIN!

Have the photos on this page been taken by a camera with a broken lens? Or are they pictures of the inside of a kaleidoscope? Actually, they are photos of items you may have around your home. Can you figure out what each is?

The answers are printed upside down at the bottom of the page.



Answers: 1. Peacock 2. Rubberband 3. Basketball 4. Basketball 5. Chandelier 6. Key 7. Globe  
8. Map 9. Chessboard 10. Lamp 11. Lamp 12. Lamp 13. Lamp 14. Lamp 15. Lamp 16. Lamp 17. Lamp 18. Lamp 19. Lamp 20. Lamp 21. Lamp 22. Lamp 23. Lamp 24. Lamp 25. Lamp 26. Lamp 27. Lamp 28. Lamp 29. Lamp 30. Lamp 31. Lamp 32. Lamp 33. Lamp 34. Lamp 35. Lamp 36. Lamp 37. Lamp 38. Lamp 39. Lamp 40. Lamp 41. Lamp 42. Lamp 43. Lamp 44. Lamp 45. Lamp 46. Lamp 47. Lamp 48. Lamp 49. Lamp 50. Lamp

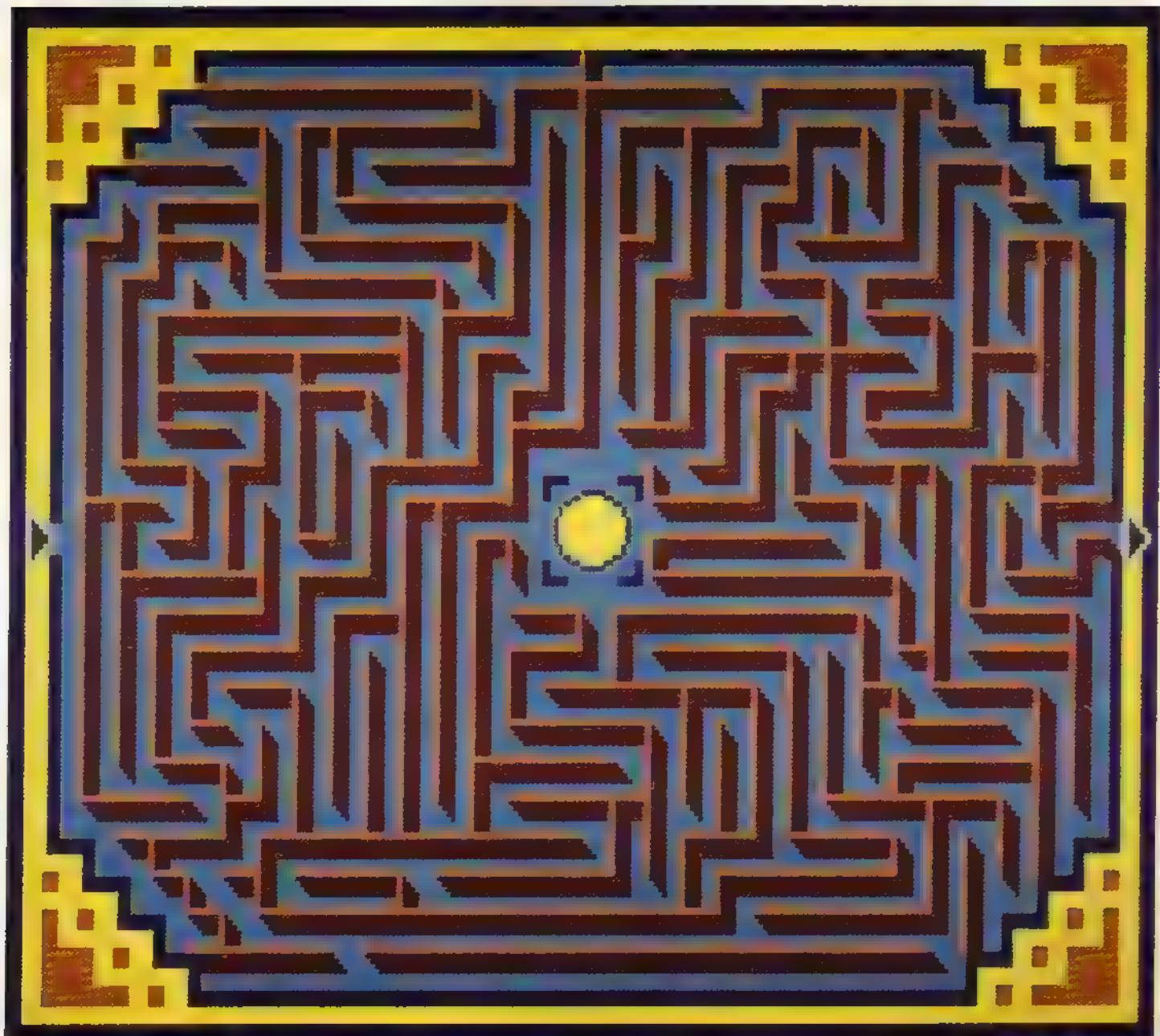
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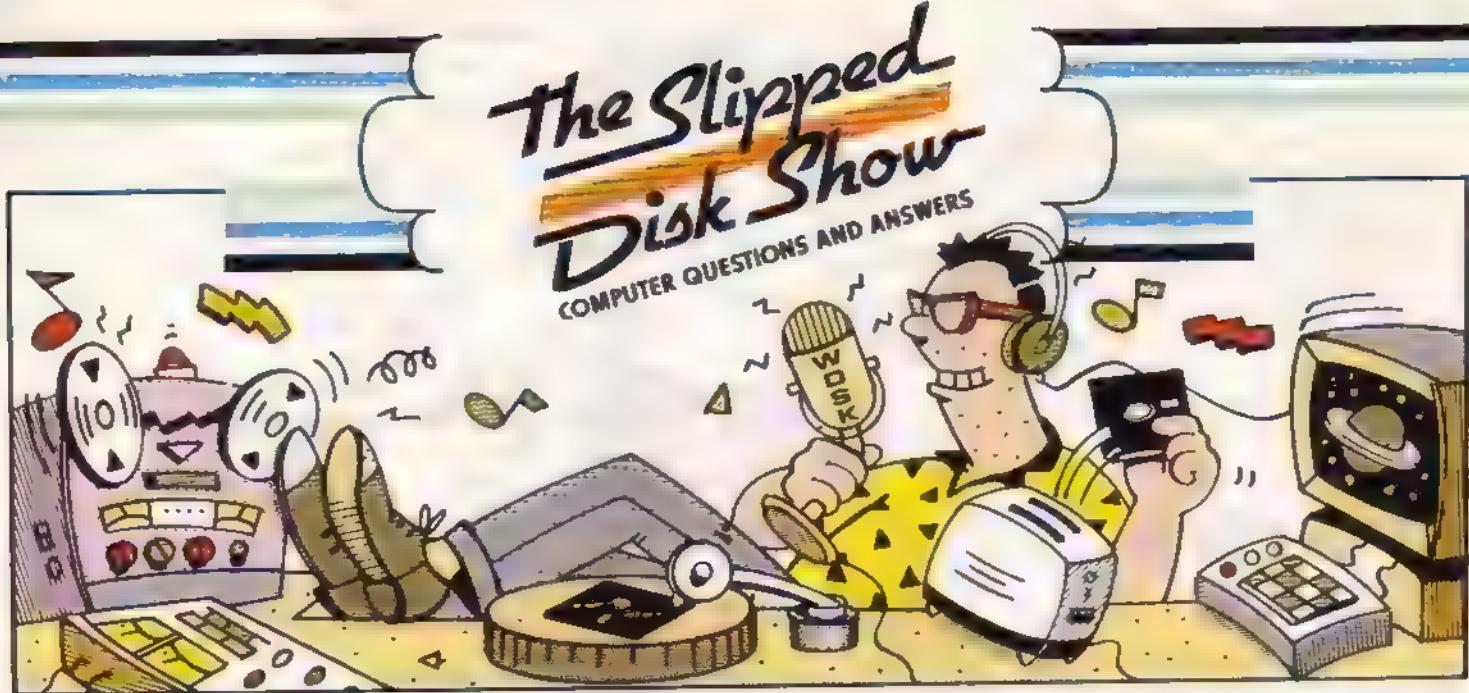
THE  
HIGH-TECH  
WORLD OF  
COMPUTERS

## Off-The-Wall Walls

Here's a maze that will make you feel all "walled in." To get from the entrance on the left to the exit on the right, you have to pass through

the circle in the center. These wacky walls were created by an artist using an Amiga computer. Answer on the Did It! page.





Howdy, joystick jockeys! Slipped Disk here, floppy disk jockey and mooseologist (moose-AH-low-gist). That's right. Bet a lot of you didn't know that besides being a world-famous computer expert, I am also a student of moose (mooses?) (meeses?). In fact, I've studied with some of the best moose brains in the country. Everything I know about computers I learned from a moose. For example, did you know that computers never shed their antlers?

But this is a computer show, not a moose show, so it's time to answer our first question. It's from **Chris Prato, 11, of Fresh Meadows, New York**. Chris asks:

**"What is a modem?"**

You know, Chris, there are a lot of similarities between a moose and a modem. Of course, modems don't browse on swamp grasses or wander through the woods, but then again, why should they?

However, modems do translate computer data into electrical signals that can be sent over a telephone line.

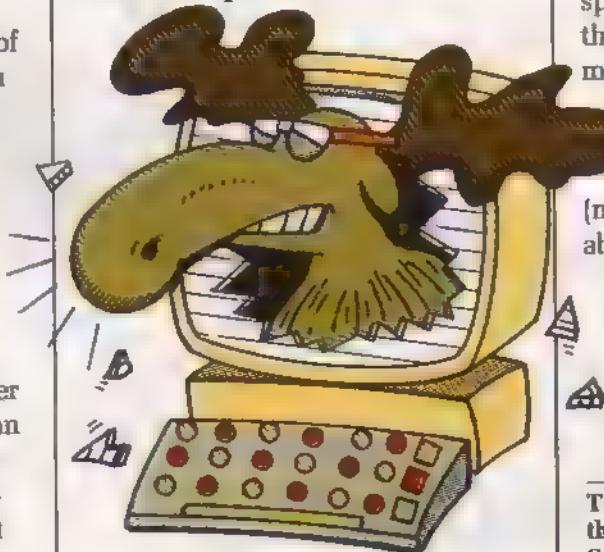
Remember, all data in a computer is stored in the form of bits. You can think of bits as little electric lights that are either on or off. Your computer puts bits into groups of eight and each group represents one let-

ter or number. A modem takes those bits one at a time and transmits them over a phone line. It takes another modem at the other end to translate the phone signal back into computer data.

The speed of modems is measured in bauds, or bits per second. Most modems transmit at either 300 or 1200 bauds.

Now, the speed of moose is measured in bullwinkles. That's the time it takes the average moose to eat a small pine tree. It won't take many bullwinkles to answer this next question from **Rusty Spoletski, 9, of Grand Rapids, Michigan**. Rusty wants to know:

**"What are sprites?"**



Rusty, in computer lingo, a sprite is a drawing or a graphic that can be easily moved around your video screen by the computer. If a computer has sprites, it means it has a built-in program that can make small drawings appear and move very quickly. The Texas Instruments 99/4A, the Commodore 64/128 and the Atari 800XL all have sprites.

To use a sprite in BASIC, you write several lines of program to define what the sprite should look like. Once you have drawn the sprite, one command will make the built-in program in your computer redraw it anywhere on the screen.

Of course, moose don't use sprites very much, but then again, they don't use computers very much, either, except once a year to help them fill out their income tax forms. But luckily, I know a lot about computers and moose (meese?). So if you have a question about either one, send it to me at:

**The Slipped Disk Show**  
**3-2-1 CONTACT Magazine**  
**1 Lincoln Plaza**  
**New York, NY 10023**

**See ya next month!**

**The Slipped Disk Show is endorsed by the American Association of Flying Squirrels.**

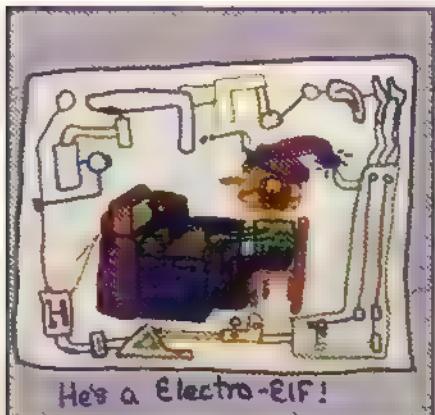
# THE LITTLE COMPUTER PEOPLE CONTEST WINNERS

Here are the winners of the Little Computer People Contest which appeared in our December issue. We asked you to write about or draw a picture of the little people who live inside your computer. There must be a little people population explosion because CONTACT received over 1,800 entries!

With all those drawings and stories to choose from, it was hard to pick just six in each category. But after consulting with the little people inside our computer, we picked these:

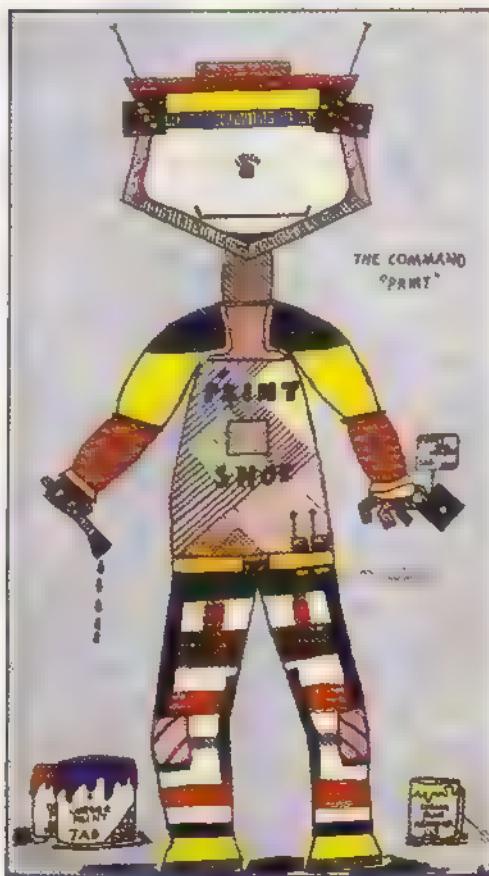
Grand Prize Winners will receive five Activision software programs. Drawing: **Andy Tso**, 11, Brooklyn, N.Y. Story: **Doug Rohde**, 9, Garrison, North Dakota.

Second Prize Winners will receive one Activision program. Drawing: **Sheila Curtin**, 9, West Chester, Pennsylvania; **Steve Hu**, 13, Parsippany, New Jersey; **Jason Keller**, 14, Orlando, Florida; **Mark Kleinkopf**, 12, Fairbanks, Alaska; **Kajal Patel**, 10, Rome, Georgia. Story: **Eric Clibrith**, 13, Orlando, Florida; **Devon Dvorzsak**, 9, Howell, New Jersey; **Zach Franklin**, 11, Los Angeles, California; **Sue Rhoda**, 11, Rochester, New York; **Levalla Rosington**, 11, Noank, Connecticut.



**Mark Kleinkopf**, 12, Fairbanks, AK

Here are the winning drawings:



**Andy Tso**, 11, Brooklyn, NY



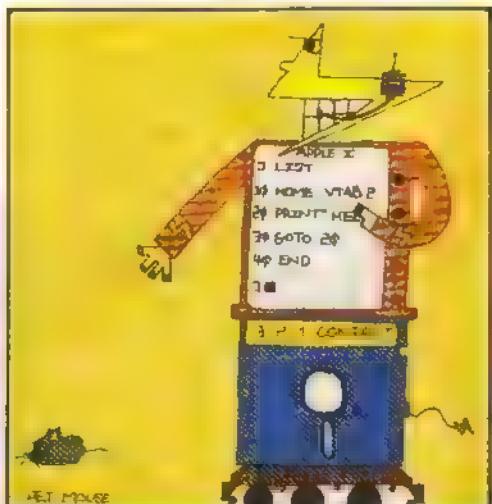
**Sheila Curtin**, 9, West Chester, PA



**Jason Keller**, 14, Orlando, FL



**Kajal Patel**, 10, Rome, GA



**Steve Hu**, 13, Parsippany, NJ

# REVIEWS

by Phil Wiswell and Bill Gillette

All software is rated on a scale of one to 10, based on Phil and Bill's overall reaction. A rating of 10 is the very best.



## The T-Shirt Shop

(Spinnaker, Apple II, \$49.95)

**Description:** Print your own iron-on decals for T-shirts.

**Graphics:** Several dozen good designs included.

**Playability:** Lots of fun, until you run out of the special paper.

**Originality:** We don't know of another program like this.

**Rating:** 7

If you get a kick out of wearing decorated T-shirts, this program is for you.

There are two ways to use the program. You can select from 50 pre-drawn pictures, or you can make your own design. Either way you can write text, fill in areas with color, and print the results on special paper that comes with the disk. Then the design can be ironed onto a T-shirt. (Make sure you get an adult to do the ironing.) Our only complaint is that only five sheets of heat-transfer paper are included. However, you can buy more paper with a coupon that comes with the disk.

## America's Cup

(Electronic Arts, Commodore 64/128, \$24.95; also for Apple II, IBM)

**Description:** A simulation of the America's Cup yacht race for one or two players.

**Graphics:** You see a lot of blue water and not much boat.

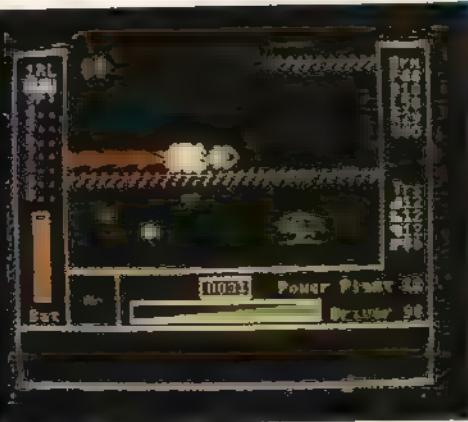
**Playability:** Unless you have a serious interest in sailing, you won't come back to this one.

**Originality:** We prefer American Challenge from Mindscape.

**Rating:** 4

This simulation has all the details of an America's Cup sailing race. Maybe that's the problem. It is a difficult game to learn and master, just as learning to sail a boat well can be difficult. You just can't pick up the joystick and head into the wind. You have to study the race course, your boat, the weather conditions, learn which sails to use in which winds, what angles to sail on, and how to trim the sails for maximum speed.

You must learn how to control your crew, pay attention to the weather and watch for other boats because you will be penalized for not yielding the right of way. All these details may teach you a lot about sailing, but they don't add up to an exciting game.



## Autoduel

(Origin Systems, Commodore 64/128, \$49.95; also for the Apple II)

**Description:** A cross between a car race and a demolition derby.

**Graphics:** A huge playing map of well-drawn roadways and landscapes.

**Playability:** A great racing game, and also a custom car design kit.

**Originality:** A version of the board game *Car Wars*.

**Rating:** 8

The object of this game is to drive packages from one city to another. However, you can't just jump in a car and go. You have to earn some money first because you must build your car from scratch.

Once you hit the road with your first delivery job, you may wish you hadn't left your driveway. Why? This game is set in a future time when pirate cars roam the highways, attacking others at random. Armor and weapons, of course, cost lots of money, so you have to keep driving to buy protection for yourself. You don't get any points for destroying other cars in this game, just for reaching your destinations safely.



## Moon Mist

(Infocom, IBM PC, \$40; also for most home computers)

**Description:** A spooky text adventure set in a medieval castle on a misty moor in England.

**Graphics:** None, all text.

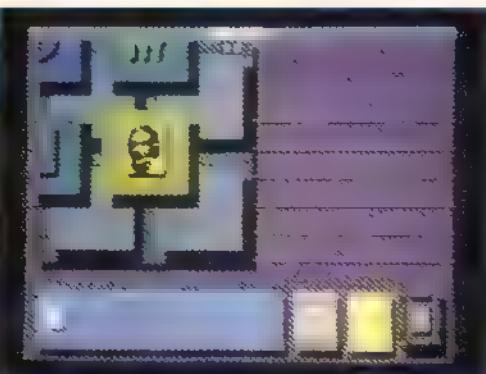
**Playability:** Good replay value because you may choose from several versions of the story.

**Originality:** This is not only an excellent game; it is a very well written and interesting mystery.

**Rating:** 9

*Moon Mist* is a story about a castle haunted by what seems to be a ghost. As the main character, your job is to figure out who or what the ghost is and what it wants. You have been brought to the castle by a lady friend of yours, Tamara, who thinks that someone is trying to kill her. Throughout the game you will meet and talk with many other characters, including the Lord of the Castle, his servants, and his guests, and you will find clues hidden in the rooms and secret passageways.

Everyone knows there is a treasure hidden somewhere in the castle, so one of the characters could be pretending to be a ghost to scare the others away. Or it could be Tamara herself. There are lots of great riddles in *Moon Mist* to keep you going for weeks or months. Plus there are four different versions of the game on the disk, so you can solve this adventure more than once.



## Portal

(Activision, Commodore 64, \$40; also for Apple II)

**Description:** A very unusual adventure in which you explore a futuristic computer database.

**Graphics:** A superb use of color graphics.

**Playability:** The world of *Portal* is huge, contained on five disk sides, and it is a very difficult game.

**Originality:** A highly original game; first of its kind.

**Rating:** 7

We must start this review with two thoughts: 1) This is a very strange game, and 2) this is a very difficult game. Still, anyone with a passion for computers and a little patience will find *Portal* an extraordinary experience. The idea is that you have returned to Earth in the future to find no one left—no one, that is, except for a partially working computer named Homer. Unfortunately, Homer cannot quite remember what happened to all the people. Homer's databases have been mostly destroyed, with only pieces of files and clues remaining. Still, if you work hard enough, you can help Homer to remember everything, and it is quite a story!

We felt the game should have come with more explanation in the manual. But if you stick with it, the rewards are unlike those of any other game.

## Type!

(Broderbund, Apple II, \$50; also for the IBM PC)

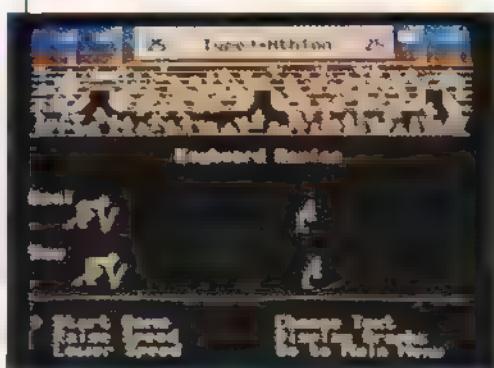
**Description:** A serious typing lesson program.

**Graphics:** Displays of the keyboard layout and bar graphs add a lot to the lessons.

**Playability:** Not for entertainment, but will improve your typing.

**Originality:** Similar to other typing programs.

**Rating:** 8



Whereas *MasterType* by Scarborough is a great typing game, *Type!* is a great typing teacher.

The five tutorial activities build from simple to difficult. The first is an introduction to the keyboard and where to place your fingers. The last is a 60-second typing test. And you may select your typing skill level, so beginners and experts alike will feel challenged.

All activities make you type real words and sentences rather than random letters. The best part of *Type!* is the way it gives you feedback on your work. At any time, you can view a graph of your progress, and the computer will give you a report on how you are doing with each key, each hand, and even each finger.

Phil Wiswell, father of three, is a computer consultant and writer. Bill Gillette, 16, is a student with a passion for computers.

# basic TRAINING



## Whodunit?

A terrible crime has taken place, and the police don't have a clue. There are six suspects in the case, but only one is the criminal. Who is the guilty one? Is it Mary Mouse? Or the famous Prince Petunia? Carmen Cat? Maybe the butler did it— Butler Bug that is.

Luckily, there is a famous detective on hand to solve the crime. (That's you!) The computer will give you clues for each suspect. (It may repeat, so be patient.) Only the criminal had a reason (motive), the right weapon and the opportunity to commit the crime. You have three guesses to decide "whodunit." Each time you play, the computer picks a different criminal and a different set of clues.

On these two pages you'll find a version of the program for Apple II computers and one for TI99/4A. For other computers, follow the instructions on the next page.

Our thanks to Terence "Turbo" Groening, 14, of Milford, Wisconsin for clueing us in on this program.

### Apple

```

10  DIM S$(6), S(6,3)
20  HOME: CLEAR
30  PRINT "WHODUNIT????"
40  GOSUB 480
50  Z = X C$ - S$
60  FOR I = 1 TO 3
70  S(Z,I) = 1: NEXT I
80  FOR I = 1 TO 6
90  IF I = Z THEN 130
100 FOR K = 1 TO 2
110 J = INT (RND (1) * 3) + 1
120 S(I,J) = 1: NEXT K
130 NEXT I
140 REM LOOP
150 GOSUB 480
160 PRINT: PRINT S$
170 I = INT (RND (1) * 3) + 1
180 ON I GOTO 190, 220, 250
190 IF S(X,I) = 1 THEN 210
200 PRINT "HAD NO MOTIVE": GO
TO 280
210 PRINT "HAD A MOTIVE": GOTO
280
220 IF S(X,I) = 1 THEN 240
230 PRINT "HAD WRONG
WEAPON": GOTO 280
240 PRINT "HAD RIGHT
WEAPON": GOTO 280
250 IF S(X,I) = 1 THEN 270
260 PRINT "HAD NO
OPPORTUNITY": GOTO 280

```

```

270 PRINT "HAD THE
OPPORTUNITY"
280 PRINT: PRINT "ARE YOU READY
TO GUESS? Y/N?"
290 INPUT R$
300 IF R$ = "Y" THEN 320
310 GOTO 140
320 REM GUESS
330 G = G + 1
340 PRINT "WHOM DO YOU
SUSPECT?"
350 INPUT G$
360 IF LEFT$ (G$,1) = LEFT$ (C$,1)
THEN 400
370 PRINT "WRONG"
380 IF G < = 2 THEN 140
390 GOTO 420
400 PRINT "RIGHT-
IN"; G; "GUESSES!"
410 GOTO 420
420 PRINT "OUT OF GUESSES!!"
430 PRINT "IT WAS"; C$
440 PRINT "PLAY AGAIN? Y/N"
450 INPUT R$
460 IF R$ = "Y" THEN 20
470 END
480 RESTORE
490 X = INT (RND (1) * 6) + 1
500 FOR I = 1 TO X
510 READ A$: S$ = A$: NEXT I
520 RETURN
530 DATA BUTLER BUG, DUKE DOG,
MARY MOUSE, CARMEN CAT,
PRINCE PETUNIA, GARY
GRASSHOPPER

```

## 199/4A

```
10  DIM S(6,3)
20  FOR X = 1 TO 6
30  READ A$
40  S$(X) = A$
50  NEXT X
60  CALL CLEAR
70  PRINT "WHODUNIT???""
80  FOR I = 1 TO 6
90  FOR J = 1 TO 3
100 S(I,J) = 0
110 NEXT J
120 NEXT I
130 G = 0
140 Z = INT(RND*6) + 1
150 FOR I = 1 TO 3
160 S(Z,I) = 1
170 NEXT I
180 FOR I = 1 TO 6
190 IF I = Z THEN 240
200 FOR K = 1 TO 2
210 J = INT(RND*3) + 1
220 S(I,J) = 1
230 NEXT K
240 NEXT I
250 REM LOOP
260 X = INT(RND*6) + 1
270 PRINT
280 PRINT S$(X)
290 I = INT(RND*3) + 1
300 ON I GOTO 310, 360, 410
310 IF S(X,I) = 1 THEN 340
320 PRINT "HAD NO MOTIVE"
330 GOTO 450
340 PRINT "HAD A MOTIVE"
350 GOTO 450
360 IF S(X,I) = 1 THEN 390
```

```
370 PRINT "HAD WRONG
WEAPON"
380 GOTO 450
390 PRINT "HAD RIGHT WEAPON"
400 GOTO 450
410 IF S(X,I) = 1 THEN 440
420 PRINT "HAD NO
OPPORTUNITY"
430 GOTO 450
440 PRINT "HAD OPPORTUNITY"
450 PRINT
460 PRINT "ARE YOU READY TO
GUESS Y = N?"
470 INPUT RS
480 IF RS = "Y" THEN 500
490 GOTO 250
500 REM GUESS
510 G = G + 1
520 PRINT "WHOM DO YOU
SUSPECT?"
530 INPUT GS
540 IF SEG$(GS,1,1) = SEG$(Z,1,1) THEN 580
550 PRINT "WRONG"
560 IF G <= 2 THEN 250
570 GOTO 600
580 PRINT "RIGHT-GOT IT IN ";G;
" GUESSES"
590 GOTO 620
600 PRINT "OUT OF GUESSES!!"
610 PRINT "IT WAS ";S$(Z)
620 PRINT "PLAY AGAIN Y/N?"
630 INPUT RS
640 IF RS = "Y" THEN 60
650 DATA BUTLER BUG, DUKE DOG,
MARY MOUSE, CARMEN CAT,
PRINCE PETUNIA, GARY
GRASSHOPPER
```



IBM

Use the Apple II version. Change line 20 to read:

```
20 CLS: CLEAR
```

## Commodore 64/128

Use the Apple II version. Change line 20 to read:

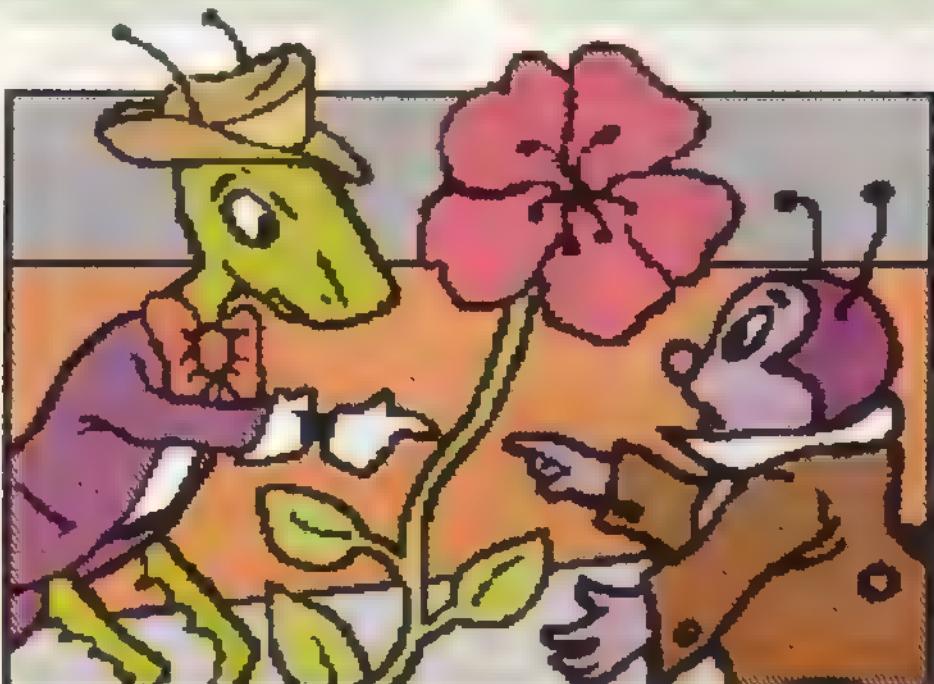
```
20 PRINT CHR$(147): CLR
```

## Atari

400/800, 400XL/800XL

Use the Apple II version. Add or replace these lines:

```
10  DIM S$(20), C$(20), G$(20), A$(20),
R$(1), S(6,30)
20  PRINT CHR$(125): G = 0
21  FOR I = 1 TO 6
22  FOR J = 1 TO 3
23  S(I,J) = 0
24  NEXT J: NEXT I
360  IF G$(1,1) = C$(1,1) THEN 400
```



## Send Us Your Programs

If you've written a program you'd like us to print, send it in. Include a note telling us your name, address, age, T-shirt size and type of computer. If we like it, we'll print it and send you \$25.

All programs must be your own original work. We cannot return programs. Please do not send disks.

Send your program to:

**Basic Training**

**3-2-1 CONTACT Magazine**

**1 Lincoln Plaza**

**New York, N.Y. 10023**

# Extra!

by Ellen R. Mednick

Wait! We're not done yet! Get ready for some more EXTRA! fun and excitement.

## Moose on the Loose

This cool moose may be on the move, but he seems to be missing part of his plaid coat. Find the pattern that matches his suit, so he can go on his merry way.

Answer on the Did It! page.



## Photo Freebee

So—you want to take pictures? For a free copy of "How to Make and Use a Pinhole Camera," write to: Eastman Kodak Company,

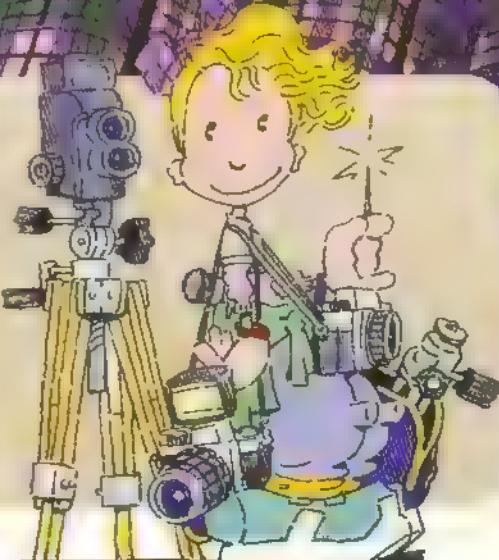
Photo Information,

Dept. 841L

343 State Street

Rochester, NY 14650

Please include a stamped, self-addressed business envelope.



## Movie Magic

Many special effects wizards started making movie magic when they were kids. Now here's your chance to make some magic and even try to trick us. First, make up a special effects scene. Use everyday objects like toy trucks, pebbles, sand, cotton balls, and toothpicks to make your model. Send in a snapshot and short description of your scene. (We can't return any photos.) The best will receive CONTACT T-shirts.

Send to: **Special Effects Contest**  
**3-2-1 CONTACT**  
**P.O. Box 40**  
**Vernon, NJ 07462**

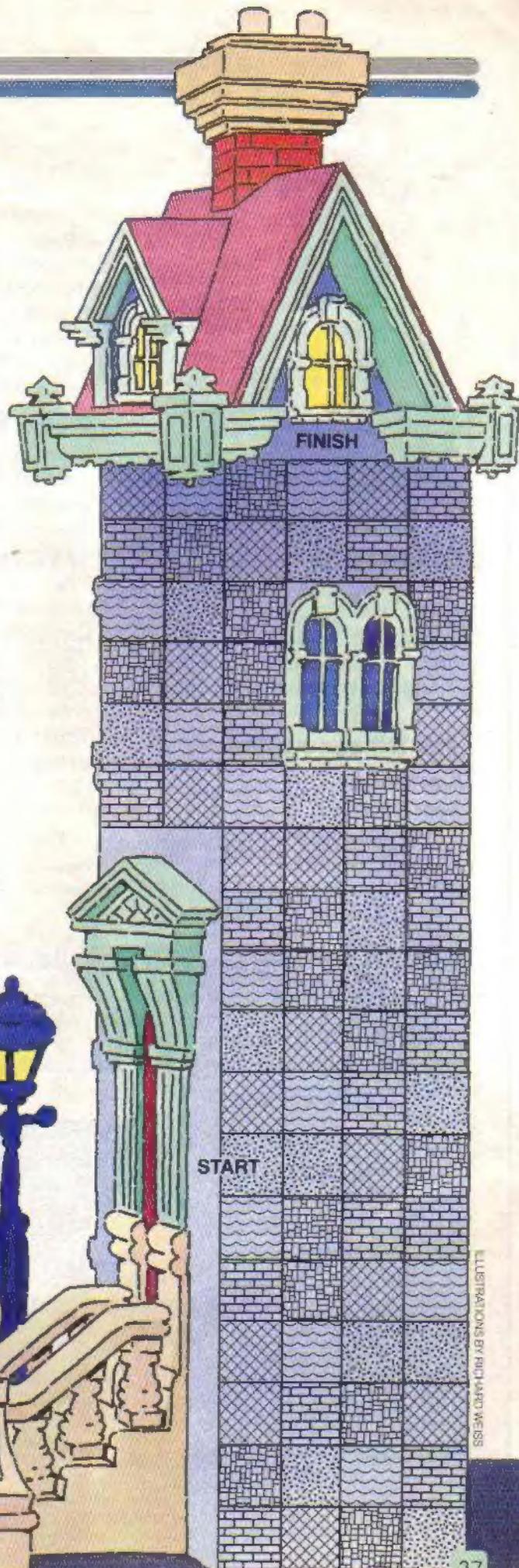
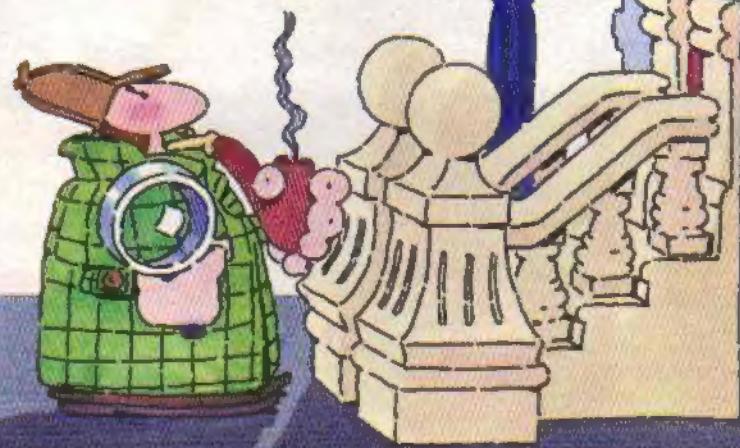


## Secrets in the Attic

Make your way through the maze by moving from one square to another as shown on the key. For example, you can only move from to . But you can't go from to . Moves can be across, up and down, but not diagonal. **Answer on the Did It! page.**

### Key

	→	
	→	
	→	
	→	
	→	



# Mail

## More Than "Meats" the Eye

Dear CONTACT,

I really loved the story on fast food (November 1986 issue). Many times, I've gone to fast-food places and eaten all that greasy food and ordered extras on my burgers. Now that I've read your story, maybe I'll think about what the food has in it before I eat it!

Mindy Haukos  
Blomkest, MN

Great, Mindy. We're glad the "Fast Food" article made you think a bit about what you're putting in your stomach. We received lots of mail on the fast food story. Thanks to everyone who wrote in.

## The Dinosaurs Are Coming!

Dear CONTACT,

You asked for readers' suggestions. My friends and I have a tremendous interest in prehistoric dinosaurs. How about doing a story on that subject?

Patrick Poloni  
Pen Argyl, PA

You're in luck! Watch for a feature story about dinosaurs in our September issue.

## Touchy Issue

In last November's Any Questions?, you wrote, "Never touch a piece of dry ice." Why shouldn't we touch it?

Lynsey Harlbart  
Woodbridge, VA

We're, um, touched that lots of kids wrote and asked that question. We're glad you didn't take our warning lightly.

The problem with touching dry ice is that it might burn your skin. You can scorch your skin by touching something too cold. The

cold freezes the tissue of skin. Then the skin forms a blister just like when you get a burn from something hot. It's the same thing that happens to people who stay outside in the cold too long and get frostbite. So now you know why we warned you!

## Oops, We Goofed!

Dear CONTACT,

Being a "Trekkie," I realized you made two mistakes in your Star Trek article (December 1986 issue). The series ran in 1966, 1967 and 1968—not in the 1970's. You also mentioned an episode in which they go back in time to the 1970's. They never went back to the 1970's. They did, however, go back to the early 1960's in "Tomorrow Is Yesterday."

Aletha Wollbrinck  
Wentzville, MO

You're absolutely right! No self-respecting Vulcan would have been so "illogical."

## More Kids Helping Kids

Remember our "Kids Helping Kids" story in the Jan/Feb '86 issue? Here are more kids who are helping out in their neighborhoods.

Last Christmas, high school students from New Hope and Solebury, Pennsylvania joined with two other schools to make more than 300 wooden toys—tug boats, bulldozers, tow trucks and race cars—for needy youngsters.

Super work!

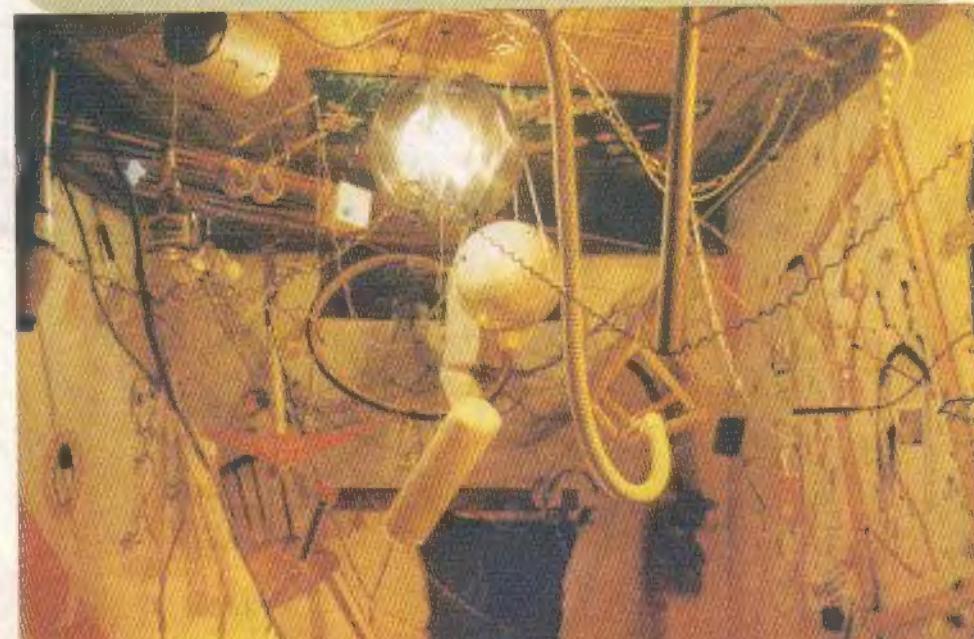
## We Want Mail!

Dear Readers,

We love hearing from you. The questions, ideas and complaints we get help us make CONTACT a better magazine. So why not drop us a line? We can't answer every letter, but we do read them all. Send your mail to:

3-2-1 CONTACT: Letters  
P.O. Box 40  
Vernon, NJ 07462

Glenn told CONTACT, "The sculpture took three months to complete and adds character to my room." We wonder what his mom thinks!

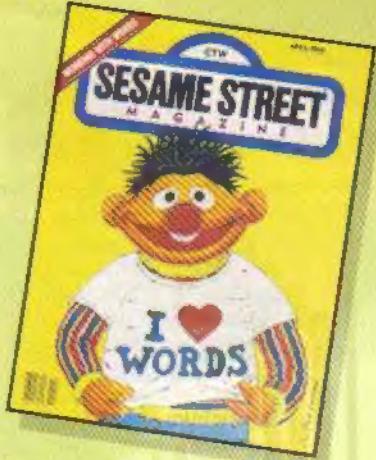


# LEARNING IS FUN ...

## Sesame Street Magazine

**B**

ig Bird and his delightful friends bring dozens of playful surprises, ten terrific times a year. (It's the entertaining education that Sesame Street does best!) Puzzles, cut-outs, games, A-B-C's, 1-2-3's...there's all the magic of the TV super-series in every colorful issue.

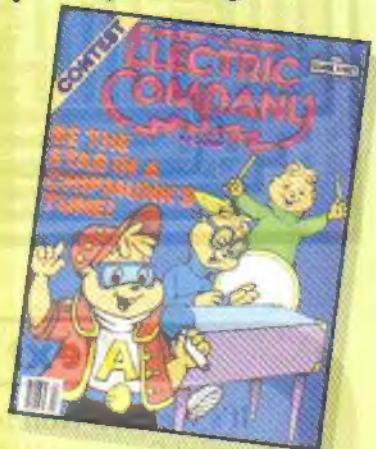


**1 year (10 issues) for only \$10.95**

## The Electric Company Magazine

**I**

t's amusing, playful, absorbing, and educational for beginning and young readers ages 6 to 10. Enjoy ten colorful issues filled with puzzles, games, cut-outs, stories, jokes...and sunny smiles.



**1 year (10 issues) for only \$10.95**

## 3-2-1 Contact

**A**

n entertaining, informative adventure in science and technology for 8 to 14-year-olds. Each of CONTACT's ten big issues is packed with puzzles, projects, experiments, and colorful feature stories. PLUS a new ENTER computer section with programming, news and reviews. A fun, involving way to learn!

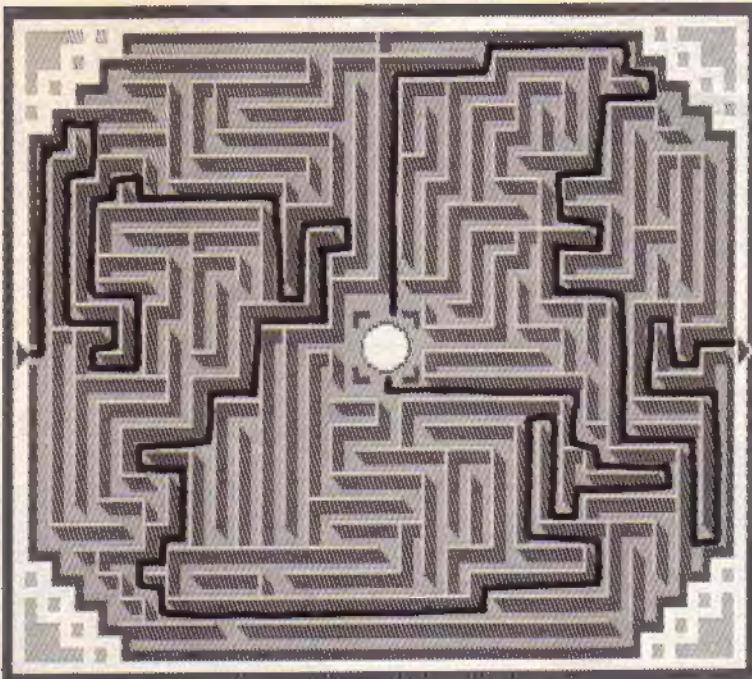


**1 year (10 issues) for only \$11.95**

If the order card is missing, please send your order to:  
Children's Television Workshop  
One Lincoln Plaza  
New York, NY 10023

# Did It!

## Off-the-Wall Walls



### Next Month!

It's Wet! It's Wonderful! It's CONTACT's Special Summer WATER Issue! Here's what you'll find inside:

#### Staying Wet

Everybody needs clean water—but not everyone has it. Find out about the fight to keep fresh water flowing.

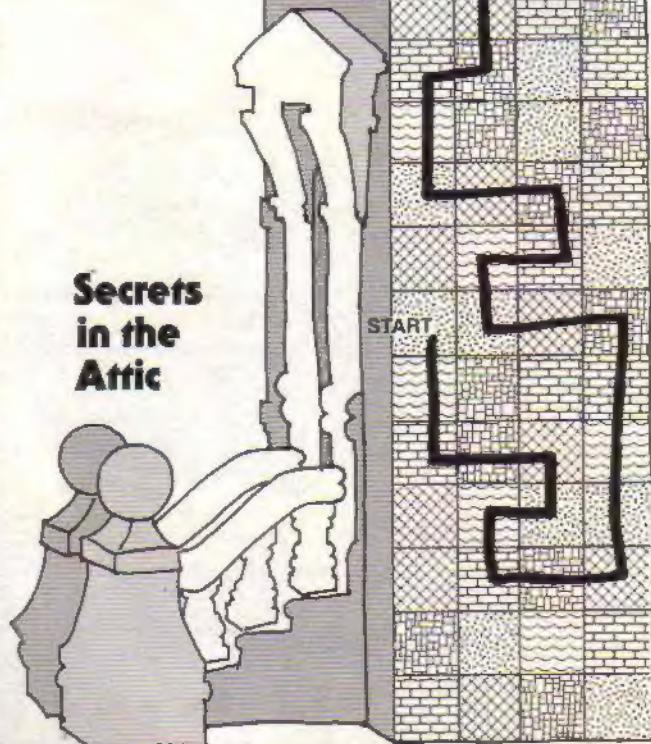
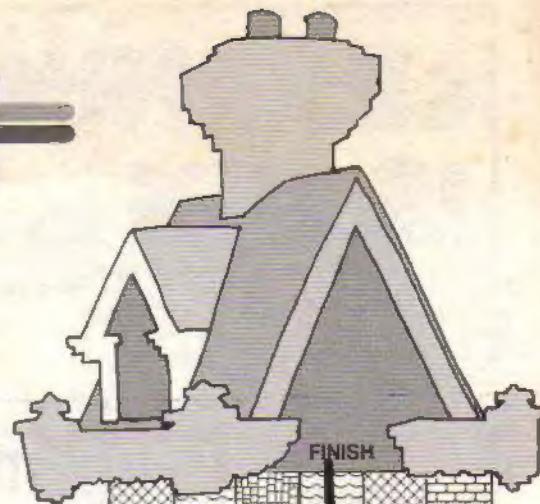
#### River Adventure

Hold on tight—it's a raft ride through the heart of the wilderness!

#### Save Molasses Reef!

A freighter smashed this natural wonder. Now deep-sea diving scientists are trying to rebuild it.

**Plus Factoids, ENTER Computer Section and More!**



### Secrets in the Attic

### Sticky Mystery (cover)

**Answer:** VELCRO

### Moose on the Loose

**Answer:** The matching pattern is the third from the left.